electric power substation [ELEC] An assembly of equipment in an electric power system through which electric energy is passed for transmission, transformation, distribution, or switching. Also known as substation. { i'lek·trik 'paù·ər 'səb ,stā·shən }

electric power transmission [ELEC] Process of transferring electric energy from one point to another in an electric power system. { i'lek·trik 'paù·ər tranz,mish·ən }

electric protective device [ELEC] A particular type of equipment used in electric power systems to detect abnormal conditions and to initiate appropriate corrective action. Also known as protective device. { i'lek·trik prə'tek·tiv di,vīs }

electric quadrupole [ELEC] A charge distribution that produces an electric field equivalent to that produced by two electric dipoles whose dipole moments have the same magnitude but point in opposite directions and which are separated from each other by a small distance. { i'lek·trik 'kwä·drə,pōl }

electric quadrupole lens [ELECTR] A device for focusing beams of charged particles which has four electrodes with alternately positive and negative polarity; used in electron microscopes and particle accelerators. { i'lek·trik 'kwä·drə ,pōl ,lenz }

electric quadrupole moment [ELEC] A quantity characterizing an electric charge distribution, obtained by integrating the product of the charge density, the second power of the distance from the origin, and a spherical harmonic Y^*_{2m} over the charge distribution. { i'lek·trik 'kwä·drə,pōl ,mō·mənt }

electric raceway *See* raceway. { i'lek·trik 'rās,wā }

electric reactor *See* reactor. { i'lek·trik rē'ak·tər }

electric relay *See* relay. { i'lek·trik 'rē,lā }

electric rotating machinery [ELEC] Any form of apparatus which has a rotating member and generates, converts, transforms, or modifies electric power, such as a motor, generator, or synchronous converter. { i'lek·trik 'rō,tād·iŋ mə ,shēn·rē }

electric scanning [ELECTR] Scanning in which the required changes in radar beam direction are produced by variations in phase or amplitude of the currents fed to the various elements of the antenna array. { i'lek·trik 'skan·iŋ }

electric shielding [ELECTROMAG] Any means of avoiding pickup of undesired signals or noise, suppressing radiation of undesired signals, or confining wanted signals to desired paths or regions, such as electrostatic shielding or electromagnetic shielding. Also known as screening, shielding. { i'lek·trik 'shēld·iŋ }

electric shunt *See* shunt. { i'lek·trik 'shənt }

electric solenoid *See* solenoid. { i'lek·trik 'sō·lə ,nȯid }

electric spark *See* spark. { i'lek·trik 'spärk }

electric strength *See* dielectric strength. { i'lek·trik 'streŋkth }

electric susceptibility [ELEC] A dimensionless parameter measuring the ease of polarization of a dielectric, equal (in meter-kilogram-second units) to the ratio of the polarization to the product of the electric field strength and the vacuum permittivity. Also known as dielectric susceptibility. { i'lek·trik sə,sep·tə'bil·əd·ē }

electric switchboard *See* switchboard. { i'lek·trik 'swich,bȯrd }

electric telemetering [COMMUN] System to transmit electric impulses from the primary detector to a remote receiving station, with or without wire interconnections. { i'lek·trik ,tel·ə'mēd·ə·riŋ }

electric transducer [ELECTR] A transducer in which all of the waves are electric. { i'lek·trik tranz'dü·sər }

electric transient [ELEC] A temporary component of current and voltage in an electric circuit which has been disturbed. { i'lek·trik 'tran·zhənt }

electric tuning [ELECTR] Tuning a receiver to a desired station by switching a set of preadjusted trimmer capacitors or coils into the tuning circuits. { i'lek·trik 'tün·iŋ }

electric vector *See* electric-field vector. { i'lek·trik 'vek·tər }

electric-wave filter *See* filter. { i'lek·trik 'wāv 'fil·tər }

electric wind *See* convective discharge. { i'lek·trik 'wind }

electric wire *See* wire. { i'lek·trik 'wīr }

electric wiring *See* wiring. { i'lek·trik 'wīr·iŋ }

electrification [ELEC] **1.** The process of establishing a charge in an object. **2.** The generation, distribution, and utilization of electricity. { i,lek·trə·fə'kā·shən }

electrization [ELEC] The electric polarization divided by the permittivity of empty space. { i,lek·trə'zā·shən }

electroacoustic effect *See* acoustoelectric effect. { i'lek·trō·ə'kü·stik i'fekt }

electroacoustics [ENG ACOUS] The conversion of acoustic energy and waves into electric energy and waves, or vice versa. { i'lek·trō·ə'kü·stiks }

electroacoustic transducer [ENG ACOUS] A transducer that receives waves from an electric system and delivers waves to an acoustic system, or vice versa. Also known as sound transducer. { i'lek·trō·ə'kü·stik tranz'dü·sər }

electrochemical power generation [ENG] The direct conversion of chemical energy to electric energy, as in a battery or fuel cell. { i,lek·trō 'kem·ə·kəl 'paù·ər ,jen·ə,rā·shən }

electrochemical recording [ELECTR] Recording by means of a chemical reaction brought about by the passage of signal-controlled current through the sensitized portion of the record sheet. { i,lek·trō'kem·ə·kəl ri'kȯrd·iŋ }

electrochemical valve [ELEC] Electric valve consisting of a metal in contact with a solution or compound, across the boundary of which current flows more readily in one direction than in the other direction, and in which the valve action is accompanied by chemical changes. { i,lek·trō'kem·ə·kəl 'valv }

electrochromic device [ENG] A self-contained, hermetically sealed, two-electrode electrolytic

cell that includes one or more electrochromic materials and an electrolyte. { i,lek·trə¦krōm·ik di'vīs }

electrochromic display [ELECTR] A solid-state passive display that uses organic or inorganic insulating solids which change color when injected with positive or negative charges. { i¦lek·trō¦krō·mik di'splā }

electrode [ELEC] An electric conductor through which an electric current enters or leaves a medium, whether it be an electrolytic solution, solid, molten mass, gas, or vacuum. { i'lek ,trōd }

electrode admittance [ELECTR] Quotient of dividing the alternating component of the electrode current by the alternating component of the electrode voltage, all other electrode voltages being maintained constant. { i'lek,trōd ad'mit·əns }

electrode capacitance [ELECTR] Capacitance between one electrode and all the other electrodes connected together. { i'lek,trōd kə'pas·əd·əns }

electrode characteristic [ELECTR] Relation between the electrode voltage and the current to an electrode, all other electrode voltages being maintained constant. { i'lek,trōd ,kar·ik·tə'ris·tik }

electrode conductance [ELECTR] Quotient of the inphase component of the electrode alternating current by the electrode alternating voltage, all other electrode voltage being maintained constant; this is a variational and not a total conductance. Also known as grid conductance. { i'lek,trōd kən'dək·təns }

electrode couple [ELEC] The pair of electrodes in an electric cell, between which there is a potential difference. { i'lek,trōd ,kə·pəl }

electrode current [ELECTR] Current passing to or from an electrode, through the interelectrode space within a vacuum tube. { i'lek,trōd ,kə·rənt }

electrode dark current [ELECTR] The electrode current that flows when there is no radiant flux incident on the photocathode in a phototube or camera tube. Also known as dark current. { i'lek ,trōd ¦därk 'kə·rənt }

electrode dissipation [ELECTR] Power dissipated in the form of heat by an electrode as a result of electron or ion bombardment. { i'lek,trōd ,dis·ə'pā·shən }

electrode drop [ELECTR] Voltage drop in the electrode due to its resistance. { i'lek,trōd ,dräp }

electrode impedance [ELECTR] Reciprocal of the electrode admittance. { i'lek,trōd im'pēd·əns }

electrode inverse current [ELECTR] Current flowing through an electrode in the direction opposite to that for which the tube is designed. { i'lek ,trōd 'in·vərs ,kə·rənt }

electrodeless discharge [ELECTR] An electric discharge generated by placing a discharge tube in a strong, high-frequency electromagnetic field. { i¦lek,trōd·ləs 'dis,chärj }

electrodeless lamp [ELECTR] A lamp based on an electrodeless discharge. { i¦lek,trōd·ləs 'lamp }

electrode potential [ELECTR] The instantaneous voltage of an electrode with respect to the cathode of an electron tube. Also known as electrode voltage. { i'lek,trōd pə'ten·chəl }

electrode resistance [ELECTR] Reciprocal of the electrode conductance; this is the effective parallel resistance and is not the real component of the electrode impedance. { i'lek,trōd ri'zis·təns }

electrode voltage *See* electrode potential. { i'lek ,trōd ,vōl·tij }

electrodynamic ammeter [ENG] Instrument which measures the current passing through a fixed coil and a movable coil connected in series by balancing the torque on the movable coil (resulting from the magnetic field of the fixed coil) against that of a spiral spring. { i,lek·trō·dī'nam·ik 'a,mēd·ər }

electrodynamic instrument [ENG] An instrument that depends for its operation on the reaction between the current in one or more movable coils and the current in one or more fixed coils. Also known as electrodynamometer. { i,lek·trō·dī'nam·ik 'in·strə·mənt }

electrodynamic loudspeaker [ENG ACOUS] Dynamic loudspeaker in which the magnetic field is produced by an electromagnet, called the field coil, to which a direct current must be furnished. { i,lek·trō·dī'nam·ik 'laud,spēk·ər }

electrodynamic machine [ELEC] An electric generator or motor in which the output load current is produced by magnetomotive currents generated in a rotating armature. { i,lek·trō·dī'nam·ik mə'shēn }

electrodynamic wattmeter [ENG] An electrodynamic instrument connected as a wattmeter, with the main current flowing through the fixed coil, and a small current proportional to the voltage flowing through the movable coil. Also known as moving-coil wattmeter. { i,lek·trō·dī'nam·ik 'wät,mēd·ər }

electrodynamometer *See* electrodynamic instrument. { i,lek·trō,dī·nə'mäm·əd·ər }

electroexplosive [ENG] An initiator or a system in which an electric impulse initiates detonation or deflagration of an explosive. { i,lek·trō·ik 'splō·siv }

electrogram [ELECTR] A record of an image of an object made by sparking, usually on paper. { i'lek·trə,gram }

electrograph [ENG] Any plot, graph, or tracing produced by the action of an electric current on prepared sensitized paper (or other chart material) or by means of an electrically controlled stylus or pen. { i'lek·trə,graf }

electrographic pencil [ELECTR] A pencil used to make a conductive mark on paper, for detection by a conductive-mark sensing device. { i'lek·trə ,graf·ik 'pen·səl }

electrokinetic transducer [ELEC] An instrument which converts dynamic physical forces, such as vibration and sound, into corresponding electric signals by measuring the streaming potential generated by passage of a polar fluid through a permeable refractory-ceramic or fritted-glass member between two chambers. { i¦lek·trō·kə'ned·ik tranz'dü·sər }

electroluminescence [ELECTR] The emission of light, not due to heating effects alone, resulting from application of an electric field to a material, usually solid. { i,lek·trō,lü·mə'nes·əns }

electroluminescent cell *See* electroluminescent panel. { i,lek·trō,lü·mə'nes·ənt 'sel }

electroluminescent display [ELECTR] A display in which various combinations of electroluminescent segments may be activated by applying voltages to produce any desired numeral or other character. { i,lek·trō,lü·mə'nes·ənt di'splā }

electroluminescent lamp *See* electroluminescent panel. { i,lek·trō,lü·mə'nes·ənt 'lamp }

electroluminescent panel [ELECTR] A surface-area light source employing the principle of electroluminescence; consists of a suitable phosphor placed between sheet-metal electrodes, one of which is essentially transparent, with an alternating current applied between the electrodes. Also known as electroluminescent cell; electroluminescent lamp; light panel; luminescent cell. { i,lek·trō,lü·mə'nes·ənt 'pan·əl }

electrolyte-activated battery [ELEC] A reserve battery in which an aqueous electrolyte is stored in a separate chamber, and a mechanism, which may be operated from a remote location, drives the electrolyte out of the reservoir and into the cells of the battery for activation. { i,lek·trə,līt ak·tə,vād·əd 'bad·ə·rē }

electrolyte-MOSFET [ENG] A metal oxide semiconductor field-effect transistor (MOSFET) that is immersed in a solution to determine the concentrations of dissolved redox active species; the bulk part of the work function of the gate electrode of the transistor changes when the sensor membrane is oxidized or reduced. Abbreviated EMOSFET. { i,lek·trə,līt 'mōs,fet }

electrolytic arrester *See* aluminum-cell arrester. { i'lek·trə,lid·ik ə'res·tər }

electrolytic capacitor [ELEC] A capacitor consisting of two electrodes separated by an electrolyte; a dielectric film, usually a thin layer of gas, is formed on the surface of one electrode. Also known as electrolytic condenser. { i'lek·trə ,lid·ik kə'pas·əd·ər }

electrolytic condenser *See* electrolytic capacitor. { i'lek·trə,lid·ik kən'den·sər }

electrolytic interrupter [ELEC] An interrupter that consists of two electrodes in an electrolytic solution; bubbles formed in the solution continually interrupt the passage of current between the electrodes. { i'lek·trə,lid·ik ,int·ə'rəp·tər }

electrolytic recording [ELECTR] Electrochemical recording in which the chemical change is made possible by the presence of an electrolyte. { i'lek·trə,lid·ik ri'kȯrd·iŋ }

electrolytic rectifier [ELEC] A rectifier consisting of metal electrodes in an electrolyte, in which rectification of alternating current is accompanied by electrolytic action; polarizing film formed on one electrode permits current flow in one direction but not the other. { i'lek·trə,lid·ik 'rek·tə,fī·ər }

electrolytic rheostat [ELEC] A rheostat that consists of a tank of conducting liquid in which electrodes are placed, and resistance is varied by changing the distance between the electrodes, the depth of immersion of the electrodes, or the resistivity of the solution. Also known as water rheostat. { i'lek·trə,lid·ik 'rē·ə,stat }

electrolytic switch [ELEC] A switch having two electrodes projecting into a chamber partly filled with electrolyte, leaving an air bubble of predetermined width; the bubble shifts position and changes the amount of electrolyte in contact with the electrodes when the switch is tilted from true horizontal. { i'lek·trə,lid·ik 'swich }

electromagnetic cathode-ray tube [ELECTR] A cathode-ray tube in which electromagnetic deflection is used on the electron beam. { i,lek·trō·mag'ned·ik 'ka,thōd 'rā ,tüb }

electromagnetic compatibility [ELECTR] The capability of electronic equipment or systems to be operated in the intended electromagnetic environment at design levels of efficiency. { i,lek·trō·mag'ned·ik kəm,pat·ə'bil·əd·ē }

electromagnetic constant *See* speed of light. { i,lek·trō·mag'ned·ik 'kän·stənt }

electromagnetic current [ELECTR] Motion of charged particles (for example, in the ionosphere) giving rise to electric and magnetic fields. { i,lek·trō·mag'ned·ik 'kə·rənt }

electromagnetic damping [ELEC] Retardation of motion that results from the reaction between eddy currents in a moving conductor and the magnetic field in which it is moving. { i,lek·trō·mag'ned·ik 'damp·iŋ }

electromagnetic deflection [ELECTR] Deflection of an electron stream by means of a magnetic field. { i,lek·trō·mag'ned·ik di'flek·shən }

electromagnetic energy [ELECTROMAG] The energy associated with electric or magnetic fields. { i,lek·trō·mag'ned·ik 'en·ər·jē }

electromagnetic environment [COMMUN] The radio-frequency fields existing in a given area. { i,lek·trō·mag'ned·ik en'vī·rən·mənt }

electromagnetic field [ELECTROMAG] An electric or magnetic field, or a combination of the two, as in an electromagnetic wave. { i,lek·trō·mag'ned·ik 'fēld }

electromagnetic field equations *See* Maxwell field equations. { i,lek·trō·mag'ned·ik 'fēld i,kwā·zhənz }

electromagnetic focusing [ELECTR] Focusing the electron beam in a video display device by means of a magnetic field parallel to the beam; the field is produced by an adjustable value of direct current through a focusing coil mounted on the neck of the tube. { i,lek·trō·mag'ned·ik 'fō·kəs·iŋ }

electromagnetic horn *See* horn antenna. { i,lek·trō·mag'ned·ik 'hȯrn }

electromagnetic induction [ELECTROMAG] The production of an electromotive force either by motion of a conductor through a magnetic field so as to cut across the magnetic flux or by a change in the magnetic flux that threads a conductor. Also known as induction. { i,lek·trō·mag'ned·ik in'dək·shən }

electromagnetic interference [ELEC] Interference, generally at radio frequencies, that is

generated inside systems, as contrasted to radio-frequency interference coming from sources outside a system. Abbreviated emi. { i¦lek·trō·mag'ned·ik ,in·tər'fir·əns }

electromagnetic interference [ELEC] Interference, generally at radio frequencies, that is generated inside systems, as contrasted to radio-frequency interference coming from sources outside a system. Abbreviated emi. { i¦lek·trō·mag'ned·ik ,in·tər'fir·əns }

electromagnetic lens [ELECTR] An electron lens in which electron beams are focused by an electromagnetic field. { i¦lek·trō·mag'ned·ik 'lenz }

electromagnetic noise [ELEC] Noise in a communications system resulting from undesired electromagnetic radiation. Also known as radiation noise. { i¦lek·trō·mag'ned·ik 'nȯiz }

electromagnetic pulse [ELECTROMAG] The pulse of electromagnetic radiation generated by a large thermonuclear explosion; althought not a direct threat to human health, it is a threat to electronic communications systems. { i¦lek·trō·mag'ned·ik 'pəls }

electromagnetic pump [ELEC] A pump in which a conductive liquid is made to move through a pipe by sending a large current transversely through the liquid; this current reacts with a magnetic field that is at right angles to the pipe and to current flow, to move the current-carrying liquid conductor. { i¦lek·trō·mag'ned·ik 'pəmp }

electromagnetic radiation [ELECTROMAG] Electromagnetic waves and, especially, the associated electromagnetic energy. { i¦lek·trō·mag'ned·ik ,rād·ē'ā·shən }

electromagnetic reconnaissance [ELECTR] Reconnaissance for the purpose of locating and identifying potentially hostile transmitters of electromagnetic radiation, including radar, communication, missile-guidance, and navigation-aid equipment. { i¦lek·trō·mag'ned·ik ri'kän·ə·säns }

electromagnetic susceptibility [ELECTR] The tolerance of circuits and components to all sources of interfering electromagnetic energy. { i¦lek·trō·mag'ned·ik sə,sep·tə'bil·əd·ē }

electromagnetic transducer *See* electromechanical transducer. { i¦lek·trō·mag'ned·ik tranz'dü·sər }

electromagnetic wave [ELECTROMAG] A disturbance which propagates outward from any electric charge which oscillates or is accelerated; far from the charge it consists of vibrating electric and magnetic fields which move at the speed of light and are at right angles to each other and to the direction of motion. { i¦lek·trō·mag'ned·ik 'wāv }

electromechanical circuit [ELEC] A circuit containing both electrical and mechanical parameters of consequence in its analysis. { i¦lek·trō·mi'kan·ə·kəl 'sər·kə t }

electromechanical dialer [ELECTR] Telephone dialer which activates one of a set of desired numbers, precoded into it, when the user selects and presses a start button. { i¦lek·trō·mi'kan·ə·kəl 'dī·lər }

electromechanical plotter [COMPUT SCI] An automatic device used in conjunction with a digital computer to produce a graphic or pictorial representation of computer data on hard copy. { i¦lek·trō·mi'kan·ə·kəl 'plād·ər }

electromechanical recording [ELECTR] Recording by means of a signal-actuated mechanical device, such as a pen arm or mirror attached to the moving coil of a galvanometer. { i¦lek·trō·mi'kan·ə·kəl ri'kȯrd·iŋ }

electromechanical transducer [ELECTR] A transducer for receiving waves from an electric system and delivering waves to a mechanical system, or vice versa. Also known as electromagnetic transducer. { i¦lek·trō·mi'kan·ə·kəl tranz'dü·sər }

electrometer [ENG] An instrument for measuring voltage without drawing appreciable current. { i,lek'träm·əd·ər }

electrometer amplifier [ELECTR] A low-noise amplifier having sufficiently low current drift and other characteristics required for measuring currents smaller than 10^{-12} ampere. { i,lek'träm·əd·ər 'am·plə,fī·ər }

electrometer tube [ELECTR] A high-vacuum electron tube having a high input impedance (low control-electrode conductance) to facilitate measurement of extremely small direct currents or voltages. { i,lek'träm·əd·ər ,tüb }

electron acceptor *See* acceptor. { i'lek,trän ak 'sep·tər }

electron avalanche *See* avalanche. { i'lek,trän 'av·ə,lanch }

electron beam [ELECTR] A narrow stream of electrons moving in the same direction, all having about the same velocity. { i'lek,trän ,bēm }

electron-beam channeling [ELECTR] The technique of transporting high-energy, high-current electron beams from an accelerator to a target through a region of high-pressure gas by creating a path through the gas where the gas density may be temporarily reduced; the gas may be ionized; or a current may flow whose magnetic field focuses the electron beam on the target. { i'lek,trän ,bēm 'chan·əl·iŋ }

electron-beam drilling [ELECTR] Drilling of tiny holes in a ferrite, semiconductor, or other material by using a sharply focused electron beam to melt and evaporate or sublimate the material in a vacuum. { i'lek,trän ,bēm 'dril·iŋ }

electron-beam generator [ELECTR] Velocity-modulated generator, such as a klystron tube, used to generate extremely high frequencies. { i'lek,trän ,bēm 'jen·ə,rād·ər }

electron-beam ion source [ELECTR] A source of multiply charged heavy ions which uses an intense electron beam with energies of 5 to 10 kiloelectronvolts to successively ionize injected gas. Abbreviated EBIS. { i'lek,trän ,bēm 'ī,än ,sȯrs }

electron-beam ion trap [ELECTR] A device for producing the highest possible charge states

of heavy ions, in which impact ionization or excitation by successive electrons is efficiently achieved by causing the ions to be trapped in a compressed electron beam by the electron beam's space charge. Abbreviated EBIT. { i,lek ,trän ,bē 'i·ən ,trap }

electron-beam lithography |ELECTR| Lithography in which the radiation-sensitive film or resist is placed in the vacuum chamber of a scanning-beam electron microscope and exposed by an electron beam under digital computer control. { i'lek,trän ,bēm li'thäg·rə·fē }

electron-beam magnetometer |ENG| A magnetometer that depends on the change in intensity or direction of an electron beam that passes through the magnetic field to be measured. { i'lek,trän ,bēm mag·nə'täm·əd·ər }

electron-beam parametric amplifier |ELECTR| A parametric amplifier in which energy is pumped from an electrostatic field into a beam of electrons traveling down the length of the tube, and electron couplers impress the input signal at one end of the tube and translate spiraling electron motion into electric output at the other. { i'lek,trän ,bēm ,par·ə|me·trik 'am·plə ,fī·ər }

electron-beam pumping |ELECTR| The use of an electron beam to produce excitation for population inversion and lasing action in a semiconductor laser. { i'lek,trän ,bēm 'pəmp·iŋ }

electron-beam recorder |ELECTR| A recorder in which a moving electron beam is used to record signals or data on photographic or thermoplastic film in a vacuum chamber. { i'lek,trän ,bēm ri'kȯrd·ər }

electron-beam tube |ELECTR| An electron tube whose performance depends on the formation and control of one or more electron beams. { i'lek,trän ,bēm 'tüb }

electron-bombardment-induced conductivity |ELECTR| In a multimode display-storage tube, a process using an electron gun to erase the image on the cathode-ray tube interface. { i'lek ,trän bäm|bärd·mənt in,düst kän·dək'tiv·əd·ē }

electron bunching *See* bunching. { i'lek,trän 'bənch·iŋ }

electron collector *See* collector. { i'lek,trän kə ,lek·tər }

electron conduction |ELEC| Conduction of electricity resulting from motion of electrons, rather than from ions in a gas or solution, or holes in a solid. { i'lek,trän kən,dək·shən }

electron-coupled oscillator |ELECTR| An oscillator employing a multigrid tube in which the cathode and two grids operate as an oscillator; the anode-circuit load is coupled to the oscillator through the electron stream. Abbreviated eco. Also known as Dow oscillator. { i'lek,trän ,kəp·əld 'äs·ə,lād·ər }

electron coupler |ELECTR| A microwave amplifier tube in which electron bunching is produced by an electron beam projected parallel to a magnetic field and, at the same time, subjected to a transverse electric field produced by a signal generator. Also known as Cuccia coupler. { i'lek ,trän ,kəp·lər }

electron coupling |ELECTR| A method of coupling two circuits inside an electron tube, used principally with multigrid tubes; the electron stream passing between electrodes in one circuit transfers energy to electrodes in the other circuit. Also known as electronic coupling. { i'lek,trän ,kəp·liŋ }

electron cyclotron resonance ion source *See* electron cyclotron resonance source. { i'lek ,trän |sī·klə,trän 'rez·ə·nəns 'ī,än ,sȯrs }

electron cyclotron resonance source |ELECTR| A source of multiply charged heavy ions that uses microwave power to heat electrons to energies of tens of kilovolts in two magnetic mirror confinement chambers in series; ions formed in the first chamber drift into the second chamber, where they become highly charged. Abbreviated ECR source. Also known as electron cyclotron resonance ion source (ECRIS). { i'lek ,trän 'sī·klə,trän 'rez·ən·əns ,sȯrs }

electron device |ELECTR| A device in which conduction is principally by electrons moving through a vacuum, gas, or semiconductor, as in a crystal diode, electron tube, transistor, or selenium rectifier. { i'lek,trän di'vīs }

electron donor *See* donor. { i'lek,trän ,dō·nər }

electron efficiency |ELECTR| The power which an electron stream delivers to the circuit of an oscillator or amplifier at a given frequency, divided by the direct power supplied to the stream. Also known as electronic efficiency. { i'lek,trän ə'fish·ən·sē }

electronegative |ELEC| **1.** Carrying a negative electric charge. **2.** Capable of acting as the negative electrode in an electric cell. { i|lek·trō 'neg·əd·iv }

electron emission |ELECTR| The liberation of electrons from an electrode into the surrounding space, usually under the influence of heat, light, or a high electric field. { i'lek·trän i'mish·ən }

electron emitter |ELECTR| The electrode from which electrons are emitted. { i'lek,trän i'mid·ər }

electron flow |ELEC| A current produced by the movement of free electrons toward a positive terminal; the direction of electron flow is opposite to that of current. { i'lek,trän ,flō }

electron gun |ELECTR| An electrode structure that produces and may control, focus, deflect, and converge one or more electron beams in an electron tube. { i'lek,trän ,gən }

electron-gun density multiplication |ELECTR| Ratio of the average current density at any specified aperture through which the electron stream passes to the average current density at the cathode surface. { i'lek,trän ,gən 'den·səd·ē ,məl·tə·plə'kā·shən }

electron hole *See* hole. { i'lek,trän ¦hōl }

electron holography [ELECTR] An imaging technique using the wave nature of electrons and light, in which an interference pattern between an object wave and a reference wave is formed using a coherent field-emission electron beam from a sharp tungsten needle, and is recorded on film as a hologram, and the image of the original object is then reconstructed by illuminating a light beam equivalent to the reference wave onto the hologram. { i,lek,trän hō 'läg·rə·fē }

electronic [ELECTR] Pertaining to electron devices or to circuits or systems utilizing electron devices, including electron tubes, magnetic amplifiers, transistors, and other devices that do the work of electron tubes. { i,lek'trän·ik }

electronically agile radar [ENG] An airborne radar that uses a phased-array antenna which changes radar beam shapes and beam positions at electronic speeds. { i,lek'trän·ik·lē ,a·jəl 'rā ,där }

electronic alternating-current voltmeter [ELECTR] A voltmeter consisting of a direct-current milliammeter calibrated in volts and connected to an amplifier-rectifier circuit. { i,lek'trän·ik ¦al·tər,nād·iŋ ¦kə·rənt 'vōlt,mēd·ər }

electronic altimeter *See* radio altimeter. { i,lek 'trän·ik al'tim·əd·ər }

electronic attack [ELECTR] A term embracing all means in electronic warfare both to counter the enemy's electronic or electromagnetic sensing and communications and also to effect offense with high-power electromagnetic weaponry. Abbreviated EA. { i,lək'trän·ik ə'tak }

electronic attitude directional indicator [NAV] A multicolor cathode-ray-tube display of attitude information (roll and pitch) showing the aircraft's position in relation to the instrument landing system or a very high-frequency omnirange station. Abbreviated EADI. { i,lek'trän·ik 'ad·ə ,tüd də'rek·shən·əl 'in·də,kād·ər }

electronic azimuth marker [ELECTR] On an airborne radar plan position indicator (PPI) a bright rotatable radial line used for bearing determination. Also known as azimuth marker. { i,lek'trän·ik 'az·ə·məth ,märk·ər }

electronic bearing cursor [ELECTR] Of a marine radar set, the bright rotatable radial line on the plan position indicator used for bearing determination. Also known as electronic bearing marker. { i,lek'trän·ik 'ber·iŋ ,kər·sər }

electronic bearing marker *See* electronic bearing cursor. { i,lek'trän·ik 'ber·iŋ ,märk·ər }

electronic calculator [ELECTR] A calculator in which integrated circuits perform calculations and show results on a digital display; the displays usually use either seven-segment light-emitting diodes or liquid crystals. { i,lek'trän·ik 'kal·kyə ,lād·ər }

electronic camouflage [ELECTR] Use of electronic means, or exploitation of electronic characteristics to reduce, submerge, or eliminate the radar echoing properties of a target. { i,lek 'trän·ik 'kam·ə,fläzh }

electronic chart display and information system [NAV] A navigation information system with an electronic chart database, as well as navigational and piloting information (typically, vessel-route-monitoring, track-keeping, and track-planning information). Abbreviated ECDIS. { i·lek¦trän·ik 'chärt di¦splā ən ,in·fər'mā·shən ,sis·təm }

electronic chart reader [COMPUT SCI] A device which scans curves by a graphical recorder on a continuous paper form and converts them into digital form. { i,lek'trän·ik 'chärt ,rēd·ər }

electronic circuit [ELECTR] An electric circuit in which the equilibrium of electrons in some of the components (such as electron tubes, transistors, or magnetic amplifiers) is upset by means other than an applied voltage. { i,lek'trän·ik 'sər·kət }

electronic codebook mode *See* block encryption. { i,lek'trän·ik 'kōd,bůk ,mōd }

electronic commerce [COMPUT SCI] Business done on the Internet. Also known as e-business; e-commerce. { i·lek¦trän·ik 'kä·mərs }

electronic commutator [ELECTR] An electron-tube or transistor circuit that switches one circuit connection rapidly and successively to many other circuits, without the wear and noise of mechanical switches. { i,lek'trän·ik 'käm·yə ,tād·ər }

electronic component [ELECTR] A component which is able to amplify or control voltages or currents without mechanical or other nonelectrical command, or to switch currents or voltages without mechanical switches; examples include electron tubes, transistors, and other solid-state devices. { i,lek'trän·ik kəm'pō·nənt }

electronic computing units [ELECTR] The sensing sections of tabulating equipment which enable the machine to handle the contents of punched cards in a prescribed manner. { i,lek'trän·ik kəm'pyüd·iŋ ,yü·nəts }

electronic control [ELECTR] The control of a machine or process by circuits using electron tubes, transistors, magnetic amplifiers, or other devices having comparable functions. { i,lek'trän·ik kən'trōl }

electronic controller [ELECTR] Electronic device incorporating vacuum tubes or solid-state devices and used to control the action or position of equipment; for example, a valve operator. { i,lek'trän·ik kən'trōl·ər }

electronic counter [ELECTR] A circuit using electron tubes or equivalent devices for counting electric pulses. Also known as electronic tachometer. { i,lek'trän·ik 'kaůnt·ər }

electronic countermeasure [ELECTR] An offensive or defensive tactic or device using electronic, electromagnetic, and reflecting apparatus to reduce the military effectiveness of enemy equipment involving electromagnetic radiation, such as radar, communication, guidance, or other radio-wave devices. Abbreviated ECM. { i,lek'trän·ik 'kaůnt·ər,mezh·ər }

electronic coupling *See* electron coupling. { i,lek 'trän·ik 'kəp·liŋ }

electronic data processing [COMPUT SCI] Processing data by using equipment that is

predominantly electronic in nature, such as an electronic digital computer. Abbreviated EDP. { i,lek'trän·ik 'dad·ə ,prä·səs·iŋ }

electronic data-processing center [COMPUT SCI] The complex formed by the computer, its peripheral equipment, the personnel related to the operation of the center and control functions, and, usually, the office space housing hardware and personnel. Abbreviated EDP center. Also known as computer center. { i,lek'trän·ik 'dad·ə ,präs·əs·iŋ ,sen·tər }

electronic data-processing management science [COMPUT SCI] The field consisting of a class of management problems capable of being handled by computer programs. { i,lek'trän·ik 'dad·ə ,prä·səs·iŋ 'man·ij·mənt ,sī·əns }

electronic data-processing system [COMPUT SCI] A system for data processing by means of machines using electronic circuitry at electronic speed, as opposed to electromechanical equipment. { i,lek'trän·ik 'dad·ə ,prä·səs·iŋ ,sis·təm }

electronic defense evaluation [ELECTR] A mutual evaluation of radar and aircraft, with the aircraft trying to penetrate the radar's area of coverage in an electronic countermeasure environment. { i,lek'trän·ik di'fens i,val·yə'wā·shən }

electronic differential analyzer [COMPUT SCI] A form of analog computer using interconnected electronic integrators to solve differential equations. { i,lek'trän·ik ,dif·ə'ren·chəl 'an·ə,liz·ər }

electronic display [ELECTR] An electronic component used to convert electric signals into visual imagery in real time suitable for direct interpretation by a human operator. { i,lek'trän·ik di'splā }

electronic distance-measuring equipment [NAV] A navigation system consisting of airborne devices that transmit microsecond pulses to special ground beacons, which retransmit the signals to the aircraft; the length of expired time between transmission and reception is measured, converted to kilometers or miles, and presented to the pilot. { i,lek'trän·ik 'dis·təns ,mezh·ə·riŋ i,kwip·mənt }

electronic dummy [ENG ACOUS] A vocal simulator which is a replica of the head and torso of a person, covered with plastisol flesh that simulates the acoustical and mechanical properties of real flesh, and possessing an artificial voice and two artificial ears. Abbreviated ED. { i,lek'trän·ik 'dəm·ē }

electronic efficiency [ELECTR] Ratio of the power at the desired frequency, delivered by the electron stream to the circuit in an oscillator or amplifier, to the average power supplied to the stream. { i,lek'trän·ik i'fish·ən·sē }

electronic engineering [ENG] Engineering that deals with practical applications of electronics. { i,lek'trän·ik ,en·jə'nir·iŋ }

electronic fuse [ENG] A fuse, such as the radio proximity fuse, set off by an electronic device incorporated in it. { i,lek'trän·ik 'fyüz }

electronic heating [ENG] Heating by means of radio-frequency current produced by an electron-tube oscillator or an equivalent radio-frequency power source. Also known as high-frequency heating; radio-frequency heating. { i,lek'trän·ik 'hēd·iŋ }

electronic horizontal-situation indicator [NAV] An integrated multicolor map display of an airplane's position combined with a color weather radar display, with a scale selected by the pilot, together with information on wind direction and velocity, horizontal situation, and deviation from the planned vertical path. Abbreviated EHSI. { i,lek'trän·ik ,här·ə'zänt·əl ,sich·ə|wā·shən ,in·də ,kād·ər }

electronic interference [ELECTR] Any electrical or electromagnetic disturbance that causes undesirable response in electronic equipment. { i,lek'trän·ik ,int·ər·'fir·əns }

electronic jammer *See* jammer. { i,lek'trän·ik 'jam·ər }

electronic jamming *See* jamming. { i,lek'trän·ik 'jam·iŋ }

electronic line scanning [ELECTR] Method which provides motion of the scanning spot along the scanning line by electronic means. { i,lek'trän·ik 'līn ,skan·iŋ }

electronic listening device [ELECTR] A device used to capture the sound waves of conversation originating in an ostensibly private setting in a form, usually as a magnetic tape recording, which can be used against the target by adverse interests. { i,lek'trän·ik 'lis·niŋ di,vīs }

electronic locator *See* metal detector. { i,lek 'trän·ik 'lō,kād·ər }

electronic locking [ELECTR] A technique for preventing the operation of a switch until a specific electrical signal (the unlocking signal) is introduced into circuitry associated with the switch; usually, but not necessarily, the unlocking signal is a binary sequence. { i,lek'trän·ik 'läk·iŋ }

electronic logger *See* Geiger-Müller probe. { i,lek 'trän·ik 'läg·ər }

electronic mail [COMMUN] The electronic transmission of letters, messages, and memos through a communications network. Also known as e-mail. { i,lek'trän·ik 'māl }

electronic microradiography [ELECTR] Microradiography of very thin specimens in which the emission of electrons from an irradiated object, either the specimen or a lead screen behind it, is used to produce a photographic image of the specimen, which is then enlarged. Also known as e-mail. { i,lek'trän·ik 'mī·krō,rād·ē'äg·rə·fē }

electronic motor control [ELECTR] A control circuit used to vary the speed of a direct-current motor operated from an alternating-current power line. Also known as direct-current motor control; motor control. { i,lek'trän·ik 'mōd·ər kən,trōl }

electronic multimeter [ELECTR] A multimeter that uses semiconductor or electron-tube circuits to drive a conventional multiscale meter. { i,lek'trän·ik 'məl·tē,mēd·ər }

electronic music [ENG ACOUS] Music consisting of tones originating in electronic sound and noise generators used alone or in conjunction with electroacoustic shaping means and sound-recording equipment. { i,lek'trän·ik 'myü·zik }

electronic musical instrument [ENG ACOUS] A musical instrument in which an audio signal is produced by a pickup or audio oscillator and amplified electronically to feed a loudspeaker, as in an electric guitar, electronic carillon, electronic organ, or electronic piano. { i,lek'trän·ik ¦myü·zə·kəl 'in·strə·mənt }

electronic noise jammer [ELECTR] An electronic jammer which emits a radio-frequency carrier modulated with a white noise signal usually derived from a gas tube; used against enemy radar. { i,lek'trän·ik 'nȯiz ,jam·ər }

Electronic Numerical Integrator and Calculator *See* ENIAC. { i,lek'trän·ik nü'mer·ə·kəl 'int·ə,grād·ər ən 'kal·kyə,lād·ər }

electronic organ [ELECTR] A musical instrument which uses electronic circuits to produce music similar to that of a pipe organ. { i,lek'trän·ik 'ȯr·gən }

electronic packaging [ENG] The technology of packaging electronic equipment; in current usage it refers to inserting discrete components, integrated circuits, and MSI and LSI chips (usually attached to a lead frame by beam leads) into plates through holes on multilayer circuit boards (also called cards), where they are soldered in place. { i,lek'trän·ik 'pak·ij·iŋ }

electronic phase-angle meter [ELECTR] A phasemeter that makes use of electronic devices, such as amplifiers and limiters, that convert the alternating-current voltages being measured to square waves whose spacings are proportional to phase. { i,lek'trän·ik 'fāz ,aŋ·gəl ,mēd·ər }

electronic photometer *See* photoelectric photometer. { i,lek'trän·ik fō'täm·əd·ər }

electronic piano [ELECTR] A piano without a sounding board, in which vibrations of each string affect the capacitance of a capacitor microphone and thereby produce audio-frequency signals that are amplified and reproduced by a loudspeaker. { i,lek'trän·ik pē'an·ō }

electronic polarization [ELEC] Polarization arising from the displacement of electrons with respect to the nuclei with which they are associated, upon application of an external electric field. { i,lek'trän·ik ,pō·lə·rə'zā·shən }

electronic power supply *See* power supply. { i,lek'trän·ik 'paù·ər sə,plī }

electronic protection [ELECTR] Measures taken to counteract the effects of electronic attack. Abbreviated EP. { i,lək'trän·ik prə'tek·shən }

electronic publishing [COMMUN] The provision of information with high editorial and value-added content in electronic form, allowing the user some degree of control and interactivity. { i,lek¦trän·ik 'pəb·lish·iŋ }

electronic radiography [ELECTR] Radiography in which the image is detached by direct image converter tubes or by the use of television pickup or electronic scanning, and the resultant signals are amplified and presented for viewing on a kinescope. { i,lek'trän·ik rād·ē'äg·rə·fē }

electronic raster scanning *See* electronic scanning. { i,lek¦trän·ik 'ras·tər ,skan·iŋ }

electronic reconnaissance [ELECTR] The detection, identification, evaluation, and location of foreign, electromagnetic radiations emanating from other than nuclear detonations or radioactive sources. { i,lek'trän·ik ri'kän·ə·səns }

electronic recording [ELECTR] The process of making a graphical record of a varying quantity or signal (or the result of such a process) by electronic means, involving control of an electron beam by electric or magnetic fields, as in a cathode-ray oscillograph, in contrast to light-beam recording. { i,lek'trän·ik ri'kȯrd·iŋ }

electronic robot [CONT SYS] A robot whose motions are powered by a direct-current stepper motor. { i,lek'trän·ik 'rō,bät }

electronic scanning [ELECTR] Scanning in which the radar beam direction is determined by control of the relative phases of the signals fed to the elements of an otherwise stationary antenna array. { i,lek'trän·ik 'skan·iŋ }

electronic sculpturing [COMPUT SCI] Procedure for constructing a model of a system by using an analog computer, in which the model is devised at the console by interconnecting components on the basis of analogous configuration with real system elements; then, by adjusting circuit gains and reference voltages, dynamic behavior can be generated that corresponds to the desired response, or is recognizable in the real system. { i,lek'trän·ik 'skəlp·chə·riŋ }

electronic security [ELECTR] Protection resulting from all measures designed to deny to unauthorized persons information of value which might be derived from the possession and study of electromagnetic radiations. { i,lek'trän·ik sə'kyür·əd·ē }

electronic sky screen equipment [ELECTR] Electronic device that indicates the departure of a missile from a predetermined trajectory. { i,lek'trän·ik 'skī ,skrēn i,kwip·mənt }

electronic spreadsheet [COMPUT SCI] A type of computer software for performing mathematical computations on numbers arranged in rows and columns, in which the numbers can depend on the values in other rows and columns, allowing large numbers of calculations to be carried out simultaneously. { i,lek'trän·ik 'spred,shēt }

electronic support measures *See* electronic warfare support measures. { i,lek'trän·ik sə'pȯrt ,mezh·ərz }

electronic surge arrester [ELECTR] Device used to switch to ground high-energy surges, thereby reducing transient energy to a level safe for secondary protectors, for example, Zener diodes, silicon rectifiers and so on. { i,lek'trän·ik 'sərj ə,res·tər }

electronic switch [ELECTR] **1.** Vacuum tube, crystal diodes, or transistors used as an on and off switching device. **2.** Test instrument used to present two wave shapes on a single gun cathode-ray tube. { i,lek'trän·ik 'swich }

electronic switching [COMMUN] Telephone switching using a computer with a storage containing program switching logic, whose output actuates switches that set up telephone

connections automatically. [ELECTR] The use of electronic circuits to perform the functions of a high-speed switch. { i,lek'trän·ik 'swich·iŋ }

electronic tablet [COMPUT SCI] A data-entry device consisting of stylus, writing surface, and circuitry that produces a pair of digital coordinate values corresponding continuously to the position of the stylus upon the surface. Also known as data tablet. { i,lek'trän·ik 'tab·lət }

electronic tachometer *See* electronic counter. { i,lek'trän·ik tə'käm·əd·ər }

electronic tuning [ELECTR] Tuning of a transmitter, receiver, or other tuned equipment by changing a control voltage rather than by adjusting or switching components by hand. { i,lek'trän·ik 'tün·iŋ }

electronic typewriter [COMPUT SCI] A typewriter whose operation is enhanced through the use of microprocessor technology to provide many of the functions of a word-processing system but which has at most a partial-line visual display. Also known as memory typewriter. { i'lek,trän·ik 'tīp,rīd·ər }

electronic video recording [ELECTR] The recording of black and white or color television visual signals on a reel of photographic film as coded black and white images. Abbreviated EVR. { i,lek'trän·ik 'vid·ē·ō ri,kȯrd·iŋ }

electronic voltage regulator [ELECTR] A device which maintains the direct-current power supply voltage for electronic equipment nearly constant in spite of input alternating-current line voltage variations and output load variations. { i,lek'trän·ik 'vōl·tij ,reg·yə,lād·ər }

electronic voltmeter [ENG] Voltmeter which uses the rectifying and amplifying properties of electron devices and their associated circuits to secure desired characteristics, such as high-input impedance, wide-frequency range, crest indications, and so on. { i,lek'trän·ik 'vōlt,mēd·ər }

electronic warfare [ELECTR] Military action involving the use of electromagnetic energy to determine, exploit, reduce, or prevent hostile use of the electromagnetic spectrum, and action which retains friendly use of electromagnetic spectrum. { i,lek'trän·ik 'wȯr,fer }

electronic warfare support measures [ELECTR] That division of electronic warfare involving actions taken to search for, intercept, locate, record, and analyze radiated electromagnetic energy for the purpose of exploiting such radiations in support of military operations. Also known as electronic support measures. { i,lek'trän·ik 'wȯr ,fer sə'pȯrt ,mezh·ərz }

electronic writing [ELECTR] The use of electronic circuits and electron devices to reproduce symbols, such as an alphabet, in a prescribed order on an electronic display device for the purpose of transferring information from a source to a viewer of the display device. { i,lek'trän·ik 'rīd·iŋ }

electron image tube *See* image tube. { i'lek,trän 'im·ij ,tüb }

electron injection [ELECTR] **1.** The emission of electrons from one solid into another. **2.** The process of injecting a beam of electrons with an electron gun into the vacuum chamber of a mass spectrometer, betatron, or other large electron accelerator. { i'lek,trän in'jek·shən }

electron lens [ELECTR] An electric or magnetic field, or a combination thereof, which acts upon an electron beam in a manner analogous to that in which an optical lens acts upon a light beam. Also known as lens. { i'lek,trän 'lenz }

electron microscope [ELECTR] A device for forming greatly magnified images of objects by means of electrons, usually focused by electron lenses. { i'lek,trän 'mī·krə,skōp }

electron mirror *See* dynode. { i'lek,trän mir·ər }

electron multiplier [ELECTR] An electron-tube structure which produces current amplification; an electron beam containing the desired signal is reflected in turn from the surfaces of each of a series of dynodes, and at each reflection an impinging electron releases two or more secondary electrons, so that the beam builds up in strength. Also known as multiplier. { i'lek ,trän 'məl·tə,plī·ər }

electron-multiplier phototube *See* multiplier phototube. { i'lek,trän 'məl·tə,plī·ər 'phōd·ō,tüb }

electronographic tube [ELECTR] An image tube used in astronomy in which the electron image formed by the tube is recorded directly upon film or plates. { i,lek,trän·ə'graf·ik 'tüb }

electronography [ELECTR] The use of image tubes to form intensified electron images of astronomical objects and record them directly on film or plates. { i,lek·trə'näg·rə·fē }

electronoluminescence *See* cathodoluminescence. { i,lek,trän·ə,lü·mə'nes·əns }

electron optics [ELECTR] The study of the motion of free electrons under the influence of electric and magnetic fields. { i'lek,trän 'äp·tiks }

electron-ray indicator *See* cathode-ray tuning indicator. { i'lek,trän ,rā 'in·də,kād·ər }

electron-ray tube *See* cathode-ray tube. { i'lek ,trän ,rā ,tüb }

electron refraction [ELECTR] The bending of an electron beam passing from one region to another of different electric potential. { i,lek ,trän ri'frak·shən }

electron-stream potential [ELECTR] At any point in an electron stream, the time average of the potential difference between that point and the electron-emitting surface. { i'lek,trän ,strēm pə'ten·chəl }

electron-stream transmission efficiency [ELECTR] At an electrode through which the electron stream (beam) passes, the ratio of the average stream current through the electrode to the stream current approaching the electrode. { i'lek,trän ,strēm tranz'mish·ən ə'fish·ən·sē }

electron telescope [ELECTR] A telescope in which an infrared image of a distant object is focused on the photosensitive cathode of an image converter tube; the resulting electron image is enlarged by electron lenses and made visible by a fluorescent screen. { i'lek,trän 'tel·ə,skōp }

electron tube [ELECTR] An electron device in which conduction of electricity is provided by electrons moving through a vacuum or gaseous medium within a gastight envelope. Also known as radio tube; tube; valve (British usage). { i'lek ,trän ,tüb }

electron-tube amplifier [ELECTR] An amplifier in which electron tubes provide the required increase in signal strength. { i'lek,trän ,tüb 'am·plə,fī·ər }

electron-tube generator [ELECTR] A generator in which direct-current energy is converted to radio-frequency energy by an electron tube in an oscillator circuit. { i'lek,trän ,tüb 'jen·ə,rād·ər }

electron-tube heater *See* heater. { i'lek,trän ,tüb 'hēd·ər }

electron-tube static characteristic [ELECTR] Relation between a pair of variables such as electrode voltage and electrode current with all other voltages maintained constant. { i'lek,trän ,tüb 'stad·ik kar·ik·tə'ris·tik }

electron voltaic effect [ELECTR] Sensitivity of photovoltaic cells to electron bombardment. { i¦lek,trän vōl'tā·ik i,fekt }

electrooptical birefringence *See* electrooptical Kerr effect. { i,lek·trō'äp·tə·kəl bī·ri'frin·jəns }

electrooptical character recognition *See* optical character recognition. { i,lek·trō'äp·tə·kəl 'kar·ik·tər ,rek·ig,nish·ən }

electrooptical Kerr effect [OPTICS] Birefringence induced by an electric field. Also known as electrooptical birefringence; Kerr effect. { i,lek·trō'äp·tə·kəl 'kər i,fekt }

electrooptical modulator [COMMUN] An optical modulator in which a Kerr cell, an electrooptical crystal, or other signal-controlled electrooptical device is used to modulate the amplitude, phase, frequency, or direction of a light beam. { i,lek·trō'äp·tə·kəl 'mäj·ə,lād·ər }

electrooptic material [OPTICS] A material in which the indices of refraction are changed by an applied electric field. { i,lek·trō'äp·tik mə'tir·ē·əl }

electrooptic radar [ENG] Radar system using electrooptic techniques and equipment instead of microwave to perform the acquisition and tracking operation. { i,lek·trō'äp·tik 'rā,där }

electrooptics [OPTICS] The study of the influence of an electric field on optical phenomena, as in the electrooptical Kerr effect and the Stark effect. Also known as optoelectronics. { i,lek·trō'äp·tiks }

electroosmotic driver [ELECTR] A type of solion for converting voltage into fluid pressure, which uses depolarizing electrodes sealed in an electrolyte and operates through the streaming potential effect. Also known as micropump. { i¦lek·trō·äz'mäd·ik 'drīv·ər }

electrophorus [ELEC] A device used to produce electric charges; it consists of a hard-rubber disk, which is negatively charged by rubbing with fur, and a metal plate, held by an insulating handle, which is placed on the disk; the plate is then touched with a grounded conductor, so that negative charge is removed and the plate has net positive charge. { i,lek'trä·fə·rəs }

electrophotoluminescence [ELECTR] Emission of light resulting from application of an electric field to a phosphor which is concurrently, or has been previously, excited by other means. { i¦lek·trō¦fōd·ō,lü·mə'nes·ə ns }

electropositive [ELEC] **1.** Carrying a positive electric charge. **2.** Capable of acting as the positive electrode in an electric cell. { i,lek·trə 'päz·əd·iv }

electroresistive effect [ELECTR] The change in the resistivity of certain materials with changes in applied voltage. { i¦lek·tro·ri'zis·tiv i,fekt }

electroscope [ENG] An instrument for detecting an electric charge by means of the mechanical forces exerted between electrically charged bodies. { i'lek·trə,skōp }

electrosensitive recording [ELECTR] Recording in which the image is produced by passing electric current through the record sheet. { i¦lek·trō'sen·səd·iv ri'kȯrd·iŋ }

electrostatic [ELEC] Pertaining to electricity at rest, such as an electric charge on an object. { i,lek·trə'stad·ik }

electrostatic accelerator [ELECTR] Any instrument which uses an electrostatic field to accelerate charged particles to high velocities in a vacuum. { i,lek·trə'stad·ik ak'sel·ə,rād·ər }

electrostatic actuator *See* actuator. { i,lek·trə 'stad·ik 'ak·chə,wād·ər }

electrostatic analyzer [ELECTR] A device which filters an electron beam, permitting only electrons within a very narrow velocity range to pass through. { i,lek·trə'stad·ik 'an·ə,līz·ər }

electrostatic attraction *See* Coulomb attraction. { i,lek·trə'stad·ik ə'trak·shən }

electrostatic cathode-ray tube [ELECTR] A cathode-ray tube in which electrostatic deflection is used on the electron beam. { i,lek·trə'stad·ik ¦kath,ōd 'rā ,tüb }

electrostatic deflection [ELECTR] The deflection of an electron beam by means of an electrostatic field produced by electrodes on opposite sides of the beam; used chiefly in cathode-ray tubes for oscilloscopes. { i,lek·trə'stad·ik di'flek·shən }

electrostatic detection [ELECTR] The detection and location of any type of solid body, such as a mineral deposit or a mine, by measuring the associated electrostatic field which arises spontaneously or is induced by the detection equipment. { i,lek·trə'stad·ik di'tek·shən }

electrostatic energy [ELEC] The potential energy which a collection of electric charges possesses

by virtue of their positions relative to each other. { i,lek·trə'stad·ik 'en·ər·jē }

electrostatic error *See* antenna effect. { i,lek·trə'stad·ik 'er·ər }

electrostatic field [ELEC] A time-independent electric field, such as that produced by stationary charges. { i,lek·trə'stad·ik 'fēld }

electrostatic focus [ELECTR] Production of a focused electron beam in a cathode-ray tube by the application of an electric field. { i,lek·trə'stad·ik 'fō·kəs }

electrostatic force [ELEC] Force on a charged particle due to an electrostatic field, equal to the electric field vector times the charge of the particle. { i,lek·trə'stad·ik ' fȯrs }

electrostatic force microscopy [ENG] The use of an atomic force microscope to measure electrostatic forces from electric charges on a surface. { i,lek·trə,stad·ik ¦fȯrs mī'krä·skə·pē }

electrostatic generator [ELEC] Any machine which produces electric charges by friction or (more commonly) electrostatic induction. { i,lek·trə'stad·ik 'jen·ə,rād·ər }

electrostatic induction [ELEC] The process of charging an object electrically by bringing it near another charged object, then touching it to ground. Also known as induction. { i,lek·trə'stad·ik in'dək·shən }

electrostatic instrument [ELEC] A meter that depends for its operation on the forces of attraction and repulsion between electrically charged bodies. { i,lek·trə'stad·ik 'in·strə·mənt }

electrostatic interactions *See* Coulomb interactions. { i,lek·trə'stad·ik int·ə'rak·shənz }

electrostatic lens [ELECTR] An arrangement of electrostatic fields which acts upon beams of charged particles similar to the way a glass lens acts on light beams. { i,lek·trə'stad·ik 'lenz }

electrostatic loudspeaker [ENG ACOUS] A loudspeaker in which the mechanical forces are produced by the action of electrostatic fields; in one type the fields are produced between a thin metal diaphragm and a rigid metal plate. Also known as capacitor loudspeaker. { i,lek·trə'stad·ik 'laud ,spēk·ər }

electrostatic memory *See* electrostatic storage. { i'lek·trə,stad·ik 'mem·rē }

electrostatic microphone *See* capacitor microphone. { i'lek·trə,stad·ik 'mī·krə,fōn }

electrostatic octupole lens [ELECTR] A device for controlling beams of electrons or other charged particles, consisting of eight electrodes arranged in a circular pattern with alternating polarities; commonly used to correct aberrations of quadrupole lens systems. { i'lek·trə,stad·ik ¦äk·tə,pōl 'lenz }

electrostatic potential *See* electric potential. { i'lek·trə,stad·ik pə'ten·chəl }

electrostatic precipitator [ENG] A device which removes dust or other finely divided particles from a gas by charging the particles inductively with an electric field, then attracting them to highly charged collector plates. Also known as precipitator. { i'lek·trə,stad·ik prə'sip·ə ,tād·ər }

electrostatic quadrupole lens [ELECTR] A device for focusing beams of electrons or other charged particles, consisting of four electrodes arranged in a circular pattern with alternating polarities. { i'lek·trə,stad·ik ¦kwä·drə,pōl 'lenz }

electrostatic repulsion *See* Coulomb repulsion. { i'lek·trə,stad·ik ri'pəl·shən }

electrostatics [ELEC] The study of electric charges at rest, their electric fields, and potentials. { i,lek·trə'stad·iks }

electrostatic scanning [ELECTR] Scanning that involves electrostatic deflection of an electron beam. { i'lek·trə,stad·ik 'skan·iŋ }

electrostatic shielding [ELEC] The placing of a grounded metal screen, sheet, or enclosure around a device or between two devices to prevent electric fields from interacting. { i'lek·trə ,stad·ik 'shēld·iŋ }

electrostatic storage [ELECTR] A storage in which information is retained as the presence or absence of electrostatic charges at specific spot locations, generally on the screen of a special type of cathode-ray tube known as a storage tube. Also known as electrostatic memory. { i'lek·trə,stad·ik 'stȯr·ij }

electrostatic storage tube *See* storage tube. { i'lek·trə,stad·ik 'stȯr·ij ,tüb }

electrostatic stress [ELEC] An electrostatic field acting on an insulator, which produces polarization in the insulator and causes electrical breakdown if raised beyond a certain intensity. { i'lek·trə,stad·ik 'stres }

electrostatic transducer [ENG ACOUS] A transducer consisting of a fixed electrode and a movable electrode, charged electrostatically in opposite polarity; motion of the movable electrode changes the capacitance between the electrodes and thereby makes the applied voltage change in proportion to the amplitude of the electrode's motion. Also known as condenser transducer. { i'lek·trə,stad·ik tranz'dü·sər }

electrostatic tweeter [ENG ACOUS] A tweeter loudspeaker in which a flat metal diaphragm is driven directly by a varying high voltage applied between the diaphragm and a fixed metal electrode. { i'lek·trə,stad·ik 'twēd·ər }

electrostatic units [ELEC] A centimeter-gram-second system of electric and magnetic units in which the unit of charge is that charge which exerts a force of 1 dyne on another unit charge when separated from it by a distance of 1 centimeter in vacuum; other units are derived from this definition by assigning unit coefficients in equations relating electric and magnetic quantities. Abbreviated esu. { i'lek·trə,stad·ik 'yü·nəts }

electrostatic voltmeter [ENG] A voltmeter in which the voltage to be measured is applied between fixed and movable metal vanes; the resulting electrostatic force deflects the movable vane against the tension of a spring. { i'lek·trə ,stad·ik 'vōlt,mēd·ər }

electrostatic wattmeter [ENG] An adaptation of a quadrant electrometer for power measurements in which two quadrants are charged by

the voltage drop across a noninductive shunt resistance through which the load current passes, and the line voltage is applied between one of the quadrants and a moving vane. { i'lek·trə,stad·ik 'wät,mēd·ər }

electrostriction transducer [ENG ACOUS] A transducer which depends on the production of an elastic strain in certain symmetric crystals when an electric field is applied, or, conversely, which produces a voltage when the crystal is deformed. Also known as ceramic transducer. { i¦lek·trō'strik·shən tranz'dü·sər }

electrothermal ammeter See thermoammeter. { i¦lek·trō'thər·məl 'a,med·ər }

electrothermal energy conversion [ENG] The direct conversion of electric energy into heat energy, as in an electric heater. { i¦lek·trō'thər·məl 'en·ər·jē kən,vər·zhən }

electrothermal process [ENG] Any process which uses an electric current to generate heat, utilizing resistance, arcs, or induction, used to achieve temperatures higher than can be obtained by combustion methods. { i¦lek·trō'thər·məl 'präs·əs }

electrothermal recording [ELECTR] Type of electrochemical recording, used in facsimile equipment, wherein the chemical change is produced principally by signal-controlled thermal action. { i¦lek·trō'thər·məl ri'kȯrd·iŋ }

electrothermal voltmeter [ENG] An electrothermal ammeter employing a series resistor as a multiplier, thus measuring voltage instead of current. { i¦lek·trō'thər·məl 'vōlt,mēd·ər }

element [COMPUT SCI] A circuit or device performing some specific elementary data-processing function. [ELECTROMAG] Radiator, active or parasitic, that is a part of an antenna. { 'el·ə·mənt }

elemental area See picture element. { ,el·ə'ment·əl 'er·ē·ə }

elementary item [COMPUT SCI] An item considered to have no subordinate item in the COBOL language. { ,el·ə'men·trē ,īd·əm }

elementary stream [COMMUN] A generic term for one of the coded video, coded audio, or other coded bit streams in a digital television system. { ,el·ə'mən·trē 'strēm }

elevation angle [ELECTROMAG] The angle that a radio, radar, or other such beam makes with the horizontal. { ,el·ə'vā·shən ,aŋ·gəl }

elevation-angle error [ELECTROMAG] In radar, the error in the measurement of the elevation angle of a target resulting from the vertical bending or refraction of radio energy in traveling through the atmosphere. Also known as elevation error. { ,el·ə'vā·shən ,aŋ·gəl ,er·ər }

elevation error See elevation-angle error. { ,el·ə'vā·shən ,er·ər }

ELF See extremely low frequency.

elimination factor [COMPUT SCI] In information retrieval, the ratio obtained in dividing the number of documents that have not been retrieved by the total number of documents in the file. { ə,lim·ə'nā·shən ,fak·tər }

eliminator [ELECTR] Device that takes the place of batteries, generally consisting of a rectifier operating from alternating current. { ə'lim·ə ,nād·ər }

E lines [ELEC] Contour lines of constant electrostatic field strength referred to some reference base. { 'ē ,līnz }

ellipsoidal floodlight [ELEC] A lighting unit used in theatrical lighting consisting of an ellipsoidal reflector with fixed spacing and a lamp; power requirements are 250–5000 watts and the reflector diameter is 10–24 inches (25–61 centimeters). Also known as scoop. { ə,lip'sȯid·əl 'fləd,līt }

ellipsoidal spotlight [ELEC] A lighting unit consisting of a reflector, lamp, single or multiple lens system, and framing device; power requirements are 250-2000 watts. { ə,lip'sȯid·əl 'spät,līt }

elliptical system [ENG] A tracking or navigation system where ellipsoids of position are determined from time or phase summation relative to two or more fixed stations which are the focuses for the ellipsoids. { ə'lip·tə·kəl 'sis·təm }

elliptic-integral filter [ELECTR] An electronic filter whose gain characteristic has both an equal-ripple shape in the pass-band and equal minima of attenuation in the stop-band. Also known as Cauer filter. { ə,lip·tik ,int·ə·grəl 'fil·tər }

ellipticity See axial ratio. { ē,lip'tis·əd·ē }

elongation [COMMUN] The extension of the envelope of a signal due to delayed arrival of multipath components. { ē,loŋ'gā·shən }

ELSE instruction [COMPUT SCI] An instruction in a programming language which tells a program what actions to take if previously specified conditions are not met. { 'els in,strək·shən }

ELSE rule [COMPUT SCI] A convention in decision tables which spells out which action to take in the case specified conditions are not met. { 'els ,rül }

e-mail See electronic mail. { 'ē,māl }

emanation security [ELECTR] The protection resulting from all measures designed to deny unauthorized persons information of value which might be derived from unintentional emissions from other than telecommunications systems. { ,em·ə'nā·shən sə'kyúr·ə·dē }

embedded command [COMPUT SCI] In word processing, a code inserted in a text document that instructs the printer to change its print attributes. { em¦bed·əd kə'mand }

embedded pointer [COMPUT SCI] A pointer set in a data record instead of in a directory. { em'bed·əd 'pȯint·ər }

embedded system [COMPUT SCI] A computer system that cannot be programmed by the user because it is preprogrammed for a specific task and embedded within the equipment which it serves. { em'bed·əd 'sis·təm }

embossed plate printer [COMPUT SCI] In character recognition, a data preparation device which accomplishes printing by allowing a raised character behind the paper to push the paper against the printing ribbon in front of the paper. { em ¦bäst ¦plāt 'print·ər }

embossing stylus [ENG ACOUS] A recording stylus with a rounded tip that forms a groove by

displacing material in the recording medium. { em'bäs·iŋ ˌstī·ləs }

emergency alert system [COMMUN] A system of radio, television, and cable networks and wire services for communicating with the general public in emergency situations. { əˌmər·jən·sē ə'lərt ˌsis·təm }

emergency broadcast system [COMMUN] A system of broadcast stations and interconnecting facilities authorized by the U.S. Federal Communications Commission to operate in a controlled manner during a war, threat of war, state of public peril or disaster, or other national emergency. { ə'mər·jən·sē 'brōdˌkast ˌsis·təm }

emergency power supply [ELEC] A source of power that becomes available, usually automatically, when normal power line service fails. { ə'mər·jən·sē 'paù·ər səˌplī }

emergency radio channel [COMMUN] Any radio frequency reserved for emergency use, particularly for distress signals. { ə'mər·jən·sē 'rād·ē·ōˌchan·əl }

emergency receiver [COMMUN] Receiver immediately available in a station for emergency communications and capable of being energized by self-contained or emergency power supply. { ə'mər·jən·sē ri'sē·vər }

emi *See* electromagnetic interference.

emission [ELECTROMAG] Any radiation of energy by means of electromagnetic waves, as from a radio transmitter. { i'mish·ən }

emission characteristics [ELECTR] Relation, usually shown by a graph, between the emission and a factor controlling the emission, such as temperature, voltage, or current of the filament or heater. { i'mish·ənˌkar·ik·tə'ris·tiks }

emission electron microscope [ELECTR] An electron microscope in which thermionic, photo, secondary, or field electrons emitted from a metal surface are projected on a fluorescent screen, with or without focusing. { i'mish·ən iˌlek,trän 'mī·krəˌskōp }

emission security [ELECTR] That component of communications security which results from all measures taken to protect any unintentional emissions of a telecommunications system from any form of exploitation other than cryptanalysis. { i'mish·ən sə'kyúr·əd·ē }

emitter [ELECTR] A transistor region from which charge carriers that are minority carriers in the base are injected into the base, thus controlling the current flowing through the collector; corresponds to the cathode of an electron tube. Symbolized E. Also known as emitter region. { i'mid·ər }

emitter barrier [ELECTR] One of the regions in which rectification takes place in a transistor, lying between the emitter region and the base region. { i'mid·ər ˌbar·ē·ər }

emitter bias [ELECTR] A bias voltage applied to the emitter electrode of a transistor. { i'mid·ərˌbī·əs }

emitter-coupled logic [ELECTR] A form of current-mode logic in which the emitters of two transistors are connected to a single current-carrying resistor in such a way that only one transistor conducts at a time. Abbreviated ECL. { i'mid·ər ¦kəp·əld 'läj·ik }

emitter follower [ELECTR] A grounded-collector transistor amplifier which provides less than unity voltage gain but high input resistance and low output resistance, and which is similar to a cathode follower in its operations. { i'mid·ərˌfäl·ə·wər }

emitter junction [ELECTR] A transistor junction normally biased in the low-resistance direction to inject minority carriers into a base. { i'mid·ərˌjəŋk·shən }

emitter region *See* emitter. { i'mid·ər ˌrē·jən }

emitter resistance [ELECTR] The resistance in series with the emitter lead in an equivalent circuit representing a transistor. { i'mid·ər ri ˌzis·təns }

EMM *See* entitlement management message.

E mode *See* transverse magnetic mode. { 'ē ˌmōd }

EMOSFET *See* electrolyte-MOSFET.

emoticon [COMPUT SCI] A combination of keyboard characters that depicts a sideways face whose expression conveys an emotional response. Also known as smiley. { i'mōd·əˌkän }

emphasizer *See* preemphasis network. { 'em·fəˌsīz·ər }

empty-cell process [ENG] A wood treatment in which the preservative coats the cells without filling them. { 'em·tēˌsel 'präs·əs }

empty medium [COMPUT SCI] A material which has been prepared to have data recorded on it by the entry of some preliminary data, such as feed holes punched in a paper tape or header labels written on a magnetic tape; in contrast to a virgin medium. { 'em·tē 'mēd·ē·əm }

empty shell [COMPUT SCI] A room that has been fully prepared for the installation of computer and data-processing equipment. { 'em·tē 'shel }

emulation [COMPUT SCI] Imitation of one computer system by another so that the latter functions in exactly the same way and runs the same programs. { ˌem·yə'lā·shən }

emulation mode [COMPUT SCI] A method of operation in which a computer actually executes the instructions of a different (simpler) computer, in contrast to normal mode. { ˌem·yə'lā·shənˌmōd }

emulator [COMPUT SCI] The microprogram-assisted macroprogram which allows a computer to run programs written for another computer. { 'em·yəˌlād·ər }

emulator circuit [COMPUT SCI] A circuit built into a computer's control section to enable it to process instructions that were written for another computer. { 'em·yəˌlād·ərˌsər·kət }

enable [COMPUT SCI] **1.** To authorize an activity which would otherwise be suppressed, such as to write on a tape. **2.** To turn on a computer system or a piece of equipment. [ELECTR] To initiate the operation of a device or circuit by applying a trigger signal or pulse. { ə'nā·bəl }

enabled instruction [COMPUT SCI] An instruction in a program in data flow language, all of whose

input values are present, so that the instruction may be carried out. { ə'nā·bəld in'strək·shən }

enabling pulse [ELECTR] A pulse that prepares a circuit for some subsequent action. { ə'nāb·liŋ ˌpəls }

encipher [COMMUN] To convert a plain-text message into unintelligible language by means of a cryptosystem. Also known as encrypt. { en'sī·fər }

enciphered facsimile communications [COMMUN] Communications in which security is accomplished by mixing pulses produced by a key generator with the output of the facsimile converter; plain text is recovered by subtracting the identical key at the receiving terminal; unauthorized listeners are unable to reconstruct the plain text unless they have an identical key generator and the daily key setting. { en'sī·fərd fak'sim·ə·lē kə ˌmyün·ə'kā·shənz }

enclave *See* domain. { 'än,klāv }

enclosed arc lamp [ELEC] An arc lamp in which the arc produced by carbon electrodes is protected from the atmosphere by a translucent enclosure. { in¦klōzd 'ärk ˌlamp }

encode [COMMUN] To express given information by means of a code. [COMPUT SCI] To prepare a routine in machine language for a specific computer. { en'kōd }

encoded abstract [COMPUT SCI] An abstract prepared to be scanned by automatic electronic machines. { en'kōd·əd 'ab,strakt }

encoded question [COMPUT SCI] A question set up and encoded in the form appropriate for operating, programming, or conditioning a searching device. { en'kōd·əd 'kwes·chən }

encoder [COMMUN] An embodiment of an encoding process. [COMPUT SCI] In character recognition, that class of printer which is usually designed for the specific purpose of printing a particular type font in predetermined positions on certain size forms. [ELECTR] **1.** In an electronic computer, a network or system in which only one input is excited at a time and each input produces a combination of outputs. **2.** *See* matrix. { en'kōd·ər }

encoding strip [COMPUT SCI] In character recognition, the area reserved for the inscription of magnetic-ink characters, as in bank checks. { en'kōd·iŋ 'strip }

encrypt *See* encipher. { en'kript }

encryption [COMPUT SCI] The coding of a clear text message by a transmitting unit so as to prevent unauthorized eavesdropping along the transmission line; the receiving unit uses the same algorithm as the transmitting unit to decode the incoming message. { en'krip·shən }

end-around carry [COMPUT SCI] A carry from the most significant digit place to the least significant digit place. { ¦end ə¦raůnd 'kar·ē }

end-around shift *See* cyclic shift. { ¦end ə¦raůnd 'shift }

end cell [ELEC] One of a group of cells in series with a storage battery, which can be switched in to maintain the output voltage of the battery when it is not being charged. { 'end ˌsel }

end-cell rectifier [ELECTR] Small trickle charge rectifier used to maintain voltage of the storage battery end cells. { 'end ˌsel 'rek·təˌfī·ər }

end distortion [COMMUN] The displacement of trailing edges of marking pulses transmitted over a teletypewriter circuit relative to the leading edge of the start pulse. { 'end di,stȯr·shən }

end effect [ELECTROMAG] The effect of capacitance at the ends of an antenna; it requires that the actual length of a half-wave antenna be about 5% less than a half wavelength. { 'end i,fekt }

end effector [CONT SYS] The component of a robot that comes into contact with the workpiece and does the actual work on it. Also known as hand. { 'end i,fek·tər }

end-fire antenna *See* end-fire array. { 'end ˌfīr an'ten·ə }

end-fire array [ELECTROMAG] A linear array whose direction of maximum radiation is along the axis of the array; it may be either unidirectional or bidirectional; the elements of the array are parallel and in the same plane, as in a fishbone antenna. Also known as end-fire antenna. { 'end ˌfīr ə'rā }

end instrument [ELECTR] A pickup used in telemetering to convert a physical quantity to an inductance, resistance, voltage, or other electrical quantity that can be transmitted over wires or by radio. { 'end ˌin·strə·mənt }

endless loop [COMPUT SCI] A sequence of instructions in a computer program that is repeated over and over without end, due to a mistake in the programming. { 'end·ləs 'lüp }

end loss [ELECTROMAG] The difference between the actual and the effective lengths of a radiating antenna element. { 'end ˌlós }

end mark [COMPUT SCI] A mark which signals the end of a unit of information. { 'end ˌmärk }

end-of-arm speed [CONT SYS] The speed at which an end effector arrives at its desired position. { ¦end əv ¦ärm 'spēd }

end-of-block character [COMPUT SCI] A character that indicates the completion of a block of code. { ¦end əv ¦bläk 'kar·ik·tər }

end-of-data mark [COMPUT SCI] A character or word signaling the end of all data held in a particular storage unit. { ¦end əv 'dad·ə ˌmärk }

end-of-field mark [COMPUT SCI] A data item signaling the end of a field of data, generally a variable-length field. { ¦end əv 'fēld ˌmärk }

end of file [COMPUT SCI] **1.** Termination or point of completion of a quantity of data; end of file marks are used to indicate this point. **2.** Automatic procedures to handle tapes when the end of an input or output tape is reached; a reflective spot, called a record mark, is placed on the physical end of the tape to signal the end. { ¦end əv 'fīl }

end-of-file gap [COMPUT SCI] A gap of precise dimension to indicate the end of a file on tape. Abbreviated EOF gap. { ¦end əv 'fīl ˌgap }

end-of-file indicator *See* end-of-file mark. { ¦end əv 'fīl 'in·dəˌkād·ər }

end-of-file mark [COMPUT SCI] A control character which signifies that the last record of a file has

Abbreviated E-HEMT. { en'hans·mənt ¦mōd 'hī ¡¦lek,trän mō¦bil·əd·ē tran'zis·tər }

enhancement-mode junction field-effect transistor |ELECTR| A type of gallium arsenide field-effect transistor in which the gate consists of the junction between the *n*-type gallium arsenide forming the conducting channel and *p*-type material implanted under a metal electrode. Abbrevate E-JFET. { en'hans·mənt ¦mōd 'jəŋk·shən 'fēld i,fekt tran'zis·tər }

ENIAC |COMPUT SCI| The first digital computer in the modern sense of the word, built 1942–1945. Derived from Electronic Numerical Integrator and Calculator. { 'ē·nē·ak }

E notation |COMPUT SCI| A type of scientific notation in which the phrase "times 10 to the power of" is replaced by the letter E; for example, 3.1×10^7 is written 3.1E+7 and 5.1×10^{-9} is written 5.1E−9. { 'ē nō,tā·shən }

enqueue |ENG| To place a data item in a queue. { en'kyü }

enquiry character |COMPUT SCI| A control character used to request a response from receiving equipment. { in'kwīr·ē ,kar·ik·tər }

enter key |COMPUT SCI| A key on a computer keyboard that corresponds to the return key on a typewriter and usually signals the computer to act on the information just entered on the keyboard. { 'en·tər ,kē }

entitlement control message |COMMUN| Private conditional access information which specifies control words and possibly other stream-specific, scrambling, or control parameters. { in'tī·təl·mənt kən'trōl ,məs·ij }

entitlement management message |COMMUN| Private conditional access information which specifies the authorization level or the services of specific decoders; addrressed to single decoders or groups of decoders. { in'tī·təl·mənt 'man·ij·mənt ,məs·ij }

entity *See* record. { 'ent·ə·tē }

entity type |COMPUT SCI| A particular kind of file in a database, such as an employee, customer, or product file. { 'ent·ə·tē ,tīp }

entrance |COMPUT SCI| The location of a program or subroutine at which execution is to start. Also known as entry point. { 'en·trəns }

entrance cable |ELEC| Cable that brings power from an outside power line into a building. { 'en·trəns ,kā·bəl }

entropy |COMMUN| A measure of the absence of information about a situation, or, equivalently, the uncertainty associated with the nature of a situation. { 'en·trə·pē }

entropy coding |COMMUN| Variable-length lossless coding of the digital representation of a signal to reduce redundancy. { 'en·trə·pē ,kōd·iŋ }

entry |COMPUT SCI| Input data fed during the execution of a program by means of a terminal. { 'en·trē }

entry block |COMPUT SCI| The area of main memory reserved for the data which will be introduced at execution time. { 'en·trē ,bläk }

entry condition |COMPUT SCI| A requirement that must be met before a program or routine can be entered by a computer program. Also known as initial condition. { 'en·trē kən,dish·ən }

entry instruction |COMPUT SCI| The first instruction to be executed in a subroutine. { 'en·trē in ,strək·shən }

entry point |COMMUN| A point in a coded bit stream after which a decoder can become properly initialized and commence syntactically correct decoding. The first transmitted picture after an entry point is either an I-picture or a P-picture. If the first transmitted picture is not an I-picture, the decoder may produce one or more pictures during acquisition. |COMPUT SCI| *See* entrance. { 'en·trē ,pȯint }

entry portion |COMPUT SCI| The right-hand portion of a decision table, which comprises the condition entries and action entries, and whose columns are the decision rules. { 'en·trē ,pȯr·shən }

entry sorting |COMPUT SCI| A method of internal sorting in which records or blocks of records are placed, one at a time, in a buffer area and then integrated into the sorted list before the next record is placed in the buffer. { 'en·trē ,sȯrd·iŋ }

envelope |COMMUN| A curve drawn to pass through the peaks of a graph, such as that of a moduated radio-frequency carrier signal. |ENG| The glass or metal housing of an electron tube or the glass housing of an incandescent lamp. { 'en·və,lōp }

envelope delay |COMMUN| The time required for the envelope of a modulated signal to travel between two points in a system. { 'en·və,lōp di,lā }

envelope delay distortion *See* delay distortion. { 'en·və,lōp di,lā di'stȯr·shən }

envelope detector *See* detector. { 'en·və,lōp di ,tek·tər }

environment |COMPUT SCI| The computer system in which an applications program is running, including the hardware and system software. { in'vī·ərn·mənt *or* in'vī·rən·ment }

environmental range |ENG| The range of environment throughout which a system or portion thereof is capable of operation at not less than the specified level of reliability. { in¦vī·ərn ¦mənt·əl 'rānj }

environmental test |ENG| A laboratory test conducted to determine the functional performance

of a component or system under conditions that simulate the real environment in which the component or system is expected to operate. { in¦vī·ərn¦mənt·əl 'test }

environment division [COMPUT SCI] The section of a program written in COBOL which defines the hardware and files to be used by the program. { in¦vī·ərn¦mənt di'vizh·ən }

environment pointer [COMPUT SCI] **1.** A component of a task descriptor that designates where the instructions and data code for the task are located. **2.** A control component element belonging to the stack model of block structure execution that points to the current environment. { in¦vī·ərn¦mənt ˌpȯint·ər }

environment simulator [ENG] Any machine or artificial device that simulates all or some of the attributes of an environment. { in¦vī·ərn¦mənt 'sim·yəˌlād·ər }

EOF gap *See* end-of-file gap. { ¦ē¦ō'ef ˌgap }

EOR gap *See* end-of-record gap. { ¦ē¦ō'är ˌgap }

EP *See* electronic protection.

epitaxial diffused-junction transistor [ELECTR] A junction transistor produced by growing a thin, high-purity layer of semiconductor material on a heavily doped region of the same type. { ˌep·ə'tak·sē·əl də¦fyüzd ¦jəŋk·shən tran'zis·tər }

epitaxial diffused-mesa transistor [ELECTR] A diffused-mesa transistor in which a thin, high-resistivity epitaxial layer is deposited on the substrate to serve as the collector. { ˌep·ə'tak·sē·əl də¦fyüzd ¦mā·sə tran'zis·tər }

epitaxial layer [SOLID STATE] A semiconductor layer having the same crystalline orientation as the substrate on which it is grown. { ˌep·ə'tak·sē·əl ˌlā·ər }

epitaxial transistor [ELECTR] Transistor with one or more epitaxial layers. { ˌep·ə'tak·sē·əl tran'zis·tər }

E-plane antenna [ELECTROMAG] An antenna which lies in a plane parallel to the electric field vector of the radiation that it emits. { 'ē ˌplān anˌten·ə }

E-plane bend *See* E bend. { 'ē ˌplān ˌbend }

E-plane T junction [ELECTROMAG] Waveguide T junction in which the change in structure occurs in the plane of the electric field. Also known as series T junction. { 'ē ˌplañ 'tē ˌjəŋk·shən }

EPROM *See* erasable programmable read-only memory. { 'ēˌpräm }

equal error rate [COMMUN] The error rate of a verification system when the operating threshold for the accept/reject decision is adjusted such that the probability of false acceptance and that of false rejection become equal. Abbreviated EER. { ¦ē·kwəl 'er·ər ˌrāt }

equality gate *See* equivalence gate. { ē'kwal·əd·ē ˌgāt }

equalization [ELECTR] The effect of all frequency-discriminating means employed in transmitting, recording, amplifying, or other signal-handling systems to obtain a desired overall frequency response. Also known as frequency-response equalization. { ˌē·kwə·lə'zā·shən }

equalizer [ELECTR] A network designed to compensate for an undesired amplitude-frequency or phase-frequency response of a system or component, usually a combination of coils, capacitors, and resistors. Also known as equalizing circuit. { 'ē·kwəˌlīz·ər }

equalizer brake *See* equalizer. { 'ē·kwəˌlīz·ər ˌbrāk }

equalizing bar *See* equalizer. { 'ē·kwəˌlīz·iŋ ˌbär }

equalizing circuit *See* equalizer. { 'ēkwəˌlīz·iŋ ˌsər·kət }

equalizing current [ELEC] Current that circulates between two parallel-connected compound generators to equalize their output. { 'ē·kwəˌlīz·iŋ ˌkər·ənt }

equalizing pulses [ELECTR] In analog television, pulses at twice the line frequency, occurring just before and after the vertical synchronizing pulses, which minimize the effect of line frequency pulses on the interlace. { 'ē·kwəˌlīz·iŋ ˌpəl·səs }

equal ripple [ELECTR] Property of an amplitude or phase characteristic whose local maxima all have the same value, and whose local minima all have the same value, within a specified frequency range. { ˌē·kwəl 'rip·əl }

equal-zero indicator [COMPUT SCI] A circuit component which is on when the result of an operation is zero. { ¦ē·kwəl ¦zir·ō 'in·dəˌkād·ər }

equation solver [COMPUT SCI] A machine, usually analog, for solving systems of simultaneous equations, which may be linear, nonlinear, or differential, and for finding roots of polynomials. { i'kwā·zhən ˌsälv·ər }

equiangular spiral antenna [ELECTROMAG] A frequency-independent broad-band antenna, cut from sheet metal, that radiates a very broad, circularly polarized beam on both sides of its surface; this bidirectional radiation pattern is its chief limitation. { ¦ē·kwē¦aŋ·gyə·lər ¦spī·rəl anˌten·ə }

equilibrium brightness [ELECTR] Viewing screen brightness occurring when a display storage tube is in a fully written condition. { ˌēkwə'lib·rē·əm 'brīt·nəs }

equipment [ENG] One or more assemblies capable of performing a complete function. { ə'kwip·mənt }

equipment augmentation [COMPUT SCI] **1.** Procuring additional automatic data-processing equipment capability to accommodate increased work load within an established data system. **2.** Obtaining additional sites or locations. { ə'kwip·mənt ˌȯg·mənˌtā·shən }

equipment chain [ENG] Group of equipments that are functionally in series; the failure of one or more of the equipments results in loss of the function. { ə'kwip·mənt ˌchān }

equipment compatibility [COMPUT SCI] The ability of a device to handle data prepared or handled by other equipment, without alteration of the code or of the form of the data. { ə'kwip·mənt kəmˌpad·ə'bil·əd·ē }

equipment failure [COMPUT SCI] A fault in equipment that results in its improper behavior or

prevents the execution of a job as scheduled. { ə'kwip·mənt ˌfāl·yər }

equipotential cathode *See* indirectly heated cathode. { ˌē·kwə·pə'ten·chəl 'kathˌōd }

equipotential surface [ELEC] A surface on which the electric potential is the same at every point. { ˌē·kwə·pə'ten·chəl 'sər·fəs }

equisignal [COMMUN] **1.** Pertaining to two signals of equal intensity, used particularly with reference to the signals of a radio range station. **2.** Referring to a radio system in which two identifiable separate radio signals are received with the same intensity. { ˌē·kwə¦sig·nəl }

equisignal surface [ELECTROMAG] Surface around an antenna formed by all points at which, for transmission, the field strength (usually measured in volts per meter) is constant. { ˌē·kwə ¦sig·nəl ˌsər·fəs }

equivalence element *See* equivalence gate. { i'kwiv·ə·ləns ˌel·ə·mənt }

equivalence gate [COMPUT SCI] A logic circuit that produces a binary output signal of 1 if its two binary input signals are the same, and an output signal of 0 if the input signals differ. Also known as biconditional gate; equality gate; equivalence element; exclusive-NOR gate; match gate. { i'kwiv·ə·ləns ˌgāt }

equivalent binary digits [COMPUT SCI] The number of binary positions required to enumerate the elements of a given set. { i'kwiv·ə·lənt 'bīˌner·ē 'dij·əts }

equivalent circuit [ELEC] A circuit whose behavior is identical to that of a more complex circuit or device over a stated range of operating conditions. { i'kwiv·ə·lənt 'sər·kət }

equivalent four-wire system [COMMUN] A transmission system in which multiplex techniques are used to carry on duplex operation over a single pair of wires. { i'kwiv·ə·lənt ¦fȯr ¦wīr 'sis·təm }

equivalent noise conductance [ELECTR] Spectral density of a noise current generator measured in conductance units at a specified frequency. { i'kwiv·ə·lənt 'nȯiz kənˌdək·təns }

equivalent noise pressure [ENG ACOUS] In an electroacoustic transducer or sound reception system, the root-mean-square sound pressure of a sinusoidal plane progressive wave, which when propagated parallel to the primary axis of the transducer, produces an open-circuit signal voltage equivalent to the root-mean-square of the inherent open-circuit noise voltage of the transducer in a transmission band with a bandwidth of 1 hertz and centered on the frequency of the plane sound wave. Also known as inherent noise pressure. { i'kwiv·ə·lənt 'nȯiz ˌpresh·ər }

equivalent noise resistance [ELECTR] Spectral density of a noise voltage generator measured in ohms at a specified frequency. { i'kwiv·ə·lənt 'nȯiz riˌzis·təns }

equivalent noise temperature [ELECTR] Absolute temperature at which a perfect resistor, of equal resistance to the component, would generate the same noise as does the component at room temperature. { i'kwiv·ə·lənt 'nȯiz ˌtem·prə·chər }

equivalent periodic line [ELEC] Of a uniform line, a periodic line having the same electrical behavior, at a given frequency, as the uniform line when measured at its terminals or at corresponding section junctions. { i'kwiv·ə·lənt pir·ē¦äd·ik 'līn }

equivalent resistance [ELEC] Concentrated or lumped resistance that would cause the same power loss as the actual small resistance values distributed throughout a circuit. { i'kwiv·ə·lənt ri'zis·təns }

erasable programmable read-only memory [COMPUT SCI] A read-only memory in which stored data can be erased by ultraviolet light or other means and reprogrammed bit by bit with appropriate voltage pulses. Abbreviated EPROM. { i¦rās·ə·bəl prō¦gram·ə·bəl ¦rēd ˌōn·lē 'memˌrē }

erasable storage [COMPUT SCI] Any storage medium which permits new data to be written in place of the old, such as magnetic disk or tape. { i¦rās·ə·bəl 'stȯr·ij }

erase [COMPUT SCI] To change all the binary digits in a digital computer storage device to binary zeros. [ELECTR] To remove recorded material from magnetic tape by passing the tape through a strong, constant magnetic field (dc erase) or through a high-frequency alternating magnetic field (ac erase). { i'rās }

erase character *See* ignore character. { i¦rās 'kar·ik·tər }

erase oscillator [ELECTR] The oscillator used in a magnetic recorder to provide the high-frequency signal needed to erase a recording on magnetic tape; the bias oscillator usually serves also as the erase oscillator. { i'rās ˌäs·əˌlād·ər }

erasing head [ELECTR] A magnetic head used to obliterate material previously recorded on magnetic tape. { i'rās·iŋ ˌhed }

erasing speed [ELECTR] In charge-storage tubes, the rate of erasing successive storage elements. { i'rās·iŋ ˌspēd }

erbium-doped fiber amplifier [COMMUN] An optical-fiber amplifier whose fiber core is lightly doped with trivalent erbium ions which absorb light at pump wavelengths of 0.98 and 1.48 micrometers and emit it at a signal wavelength around 1.5 micrometers through stimulated emission. Abbreviated EDFA. { ¦ər·bē·əm ˌdōpt ˌfī·bər 'am·pləˌfī·ər }

erlang [COMMUN] A unit of communication traffic load, equal to the traffic load whose calls, if placed end to end, will keep one path continuously occupied. { 'erˌläŋ }

ERP *See* effective radiated power.

error [COMPUT SCI] An incorrect result arising from approximations used in numerical methods, rather than from a human mistake or computer malfunction. { 'er·ər }

error analysis [COMPUT SCI] In the solution of a problem on a digital computer, the estimation of the cumulative effect of rounding or truncation

errors associated with basic arithmetic operations. { 'er·ər ə,nal·ə·səs }

error burst [COMPUT SCI] The condition when more than one bit is in error in a given number of bits. { 'er·ər ,bərst }

error character [COMPUT SCI] A character that indicates the existence of an error in the data being processed or transmitted, and usually specifies that a certain amount of preceding or following data is to be ignored. { 'er·ər ,kar·ik·tər }

error checking and recovery [COMPUT SCI] An automatic procedure which checks for parity and will proceed with the execution after error correction. { 'er·ər ,chek·iŋ ən ri'kəv·ə·rē }

error-checking code See self-checking code. { 'er·ər ,chek·iŋ ,kōd }

error coefficient [CONT SYS] The steady-state value of the output of a control system, or of some derivative of the output, divided by the steady-state actuating signal. Also known as error constant. { 'er·ər ,kō·i'fish·ənt }

error constant See error coefficient. { 'er·ər ,kän·stənt }

error-control procedures [COMMUN] Methods of detecting errors and correcting or recovering from those that occur in data transmission. { 'er·ər kən,trōl prə,sē·jərz }

error-correcting code [COMPUT SCI] Data representation that allows for error detection and error correction if the error is of a specific kind. Also known as error-correction code. Abbreviated ECC. { 'er·ər kə'rek·tiŋ 'kōd }

error-correcting telegraph system [COMMUN] System employing an error-detecting code, and so conceived that any false signal initiates a repetition of the transmission of the character incorrectly received. { 'er·ər kə'rek·tiŋ 'tel·ə,graf ,sis·təm }

error correction [COMMUN] Any system for reducing errors in an incoming message, such as sending redundant signals as a check. [COMPUT SCI] Computer device for automatically locating and correcting a machine error of dropping a bit or picking up an extraneous bit, without stopping the machine or having it go to a programmed recovery routine. { 'er·ər kə,rek·shən }

error-correction code See error-correcting code. { 'er·ər kə,rek·shən 'kōd }

error-correction routine [COMPUT SCI] A program which corrects specific error conditions in another program, routine, or subroutine. { 'er·ər kə,rek·shən rü,tēn }

error-detecting code See self-checking code. { 'er·ər di,tek·tiŋ ,kōd }

error-detecting system [COMPUT SCI] An automatic system which detects an error due to a lack of data, or erroneous data during transmission. { 'er·ər di,tek·tiŋ,sis·təm }

error detection and feedback system [COMPUT SCI] An automatic system which retransmits a piece of data detected by the computer as being in error. { 'er·ər di,tek·shən ən 'fēd,bak ,sis·təm }

error detection routine See diagnostic routine. { 'er·ər di,tek·shən rü,tēn }

error diagnostic [COMPUT SCI] A computer printout of an instruction or data statement, pinpointing an error in the instruction or statement and spelling out the type of error involved. { 'er·ər ,dī·əg'näs·tik }

error frequency limit [COMPUT SCI] The maximum number of single bit errors per unit of time that a computer will accept before a machine check interrupt is initiated. Abbreviated EFL. { 'er·ər ,frē·kwən·sē ,lim·ət }

error handling [COMPUT SCI] The ability of a computer program to deal with errors automatically. { 'er·ər ,hand·liŋ }

error-indicating system [COMPUT SCI] Built-in circuits designed to indicate automatically that certain computational errors have occurred. { 'er·ər ,in·də,kād·iŋ ,sis·təm }

error interrupt [COMPUT SCI] The halt in execution of a program because of errors which the computer is not capable of correcting. { 'er·ər 'int·ə,rəpt }

error list [COMPUT SCI] A list generated by a compiler showing invalid or erroneous instructions in a source program. { 'er·ər ,list }

error log [COMPUT SCI] A file that is created during data processing to hold data known to contain errors, and that is usually printed after completion of processing so that the errors can be corrected. { 'er·ər ,läg }

error message [COMPUT SCI] A message indicating detection of an error. { 'er·ər ,mes·ij }

error range [COMPUT SCI] A range of values such that an error condition will result if a specified data item falls within it. { 'er·ər ,rānj }

error rate [COMMUN] The number of erroneous bits or characters received for some fixed number of bits transmitted. { 'er·ər ,rāt }

error ratio [COMPUT SCI] The ratio of the number of erroneous items to the total number of bits or characters transmitted. { 'er·ər ,rā·shō }

error recovery routine [COMPUT SCI] A part of a computer program that attempts to handle errors without terminating the program. { 'er·ər ri'kəv·ə·rē rü,tēn }

error report [COMPUT SCI] A list produced by a computer showing the error conditions, such as overflows and errors resulting from incorrect or unmatched data, that are generated during program execution. { 'er·ər ri,pȯrt }

error routine [COMPUT SCI] A routine which takes control of a program and initiates corrective actions when an error is detected. { 'er·ər rü ,tēn }

error signal [CONT SYS] In an automatic control device, a signal whose magnitude and sign are used to correct the alignment between the controlling and the controlled elements. [ELECTR] A voltage that depends on the signal received from the target in a tracking system, having a polarity and magnitude dependent on the angle between the target and the center of the scanning beam. { 'er·ər ,sig·nəl }

error tape [COMPUT SCI] The magnetic tape on which erroneous records are stored during processing. { 'er·ər ,tāp }

error voltage [ELEC] A voltage, usually obtained from a selsyn, that is proportional to the difference between the angular positions of the input and output shafts of a servosystem; this voltage acts on the system to produce a motion that tends to reduce the error in position. Also known as error signal. { 'er·ər ˌvōl·tij }

ES *See* elementary stream.

Esaki tunnel diode *See* tunnel diode. { e'sä·kē ˌtən·əl 'dīˌōd }

E-scan *See* E-display. { 'ē ˌskan }

escape [COMPUT SCI] To exit from a program, routine, or mode. { i'skāp }

escape character [COMPUT SCI] A character used to indicate that the succeeding character or characters are expressed in a code different from the code currently in use. { ə'skāp ˌkar·ik·tər }

E-scope *See* E-display. { 'ē ˌskōp }

ESD *See* external symbol dictionary.

ESDI *See* enhanced small device interface. { 'ez ˌdē }

esoteric name [COMPUT SCI] A symbolic name that is chosen in a computer program to designate a collection of devices. { es·ə'ter·ik 'nām }

Essen coefficient [ELEC] The torque exerted on the moving part of an electric rotating machine divided by the volume enclosed by the air gap. { 'es·ən ˌkō·iˌfish·ənt }

esu *See* electrostatic units.

etched circuit [ENG] A printed circuit formed by chemical or electrolytic removal of unwanted portions of a layer of conductive material bonded to an insulating base. { ˈecht 'sər·kət }

Ethernet [COMPUT SCI] A protocol for interconnecting computers and peripheral devices in a local area network. { 'ē·thərˌnet }

EU *See* expected value.

European Geostationary Navigation Overlay System [NAV] A satellite-based augmentation system developed jointly by the European Union, European Space Agency, and EUCONTROL. Abbreviated EGNOS. { ˌyůr·əˈpē·ən ˌjē·ō ˈstā·shə·ner·ē ˌnav·əˈgā·shən 'ō·vərˌlay ˌsis·təm }

EV *See* expected value.

even parity check [COMPUT SCI] A parity check in which the number of 0's or 1's in each word is expected to be even. { ˈē·vən 'par·əd·ē ˌchek }

event [COMMUN] A collection of elementary streams with a common time base, an associated start time, and an associated end time. [COMPUT SCI] The moment of time at which a specified change of state occurs; usually marks the completion of an asynchronous input/output operation. { i'vent }

event-driven monitor [COMPUT SCI] A computer program that measures the performance of a computer system by counting the tasks performed by the system. { i'vent ˈdriv·ən 'män·əd·ər }

even-word boundary [COMPUT SCI] A storage address that is an integral multiple of the computer's word length. { 'ēv·ən ˈwərd 'baůn·drē }

evolutionary computation *See* evolutionary programming. { ˌev·əˈlů·shəˌner·ē ˌkam·pyə'tā·shən }

evolutionary programming [COMPUT SCI] Computer programming with genetic algorithms. Also known as evolutionary computation; genetic programming. { ˌev·əˈlů·shəˌner·ē 'prōˌgram·iŋ }

evolutionary strategy *See* genetic algorithm. { ˌev·əˈlů·shəˌner·ē 'strad·ə·jē }

EVR *See* electronic video recording.

E wave *See* transverse magnetic wave. { 'ē ˌwāv }

exalted-carrier receiver [ELECTR] Receiver that counteracts selective fading by maintaining the carrier at a high level at all times; this minimizes the second harmonic distortion that would otherwise occur when the carrier drops out while leaving most of the sidebands at their normal amplitudes. { igˈzól·təd 'kar·ē·ər riˌsēv·ər }

except gate [ELECTR] A gate that produces an output pulse only for a pulse on one or more input lines and the absence of a pulse on one or more other lines. { ek'sept ˌgāt }

exception handling [COMPUT SCI] Programming techniques for dealing with error conditions, generally without terminating execution of the program. [CONT SYS] The actions taken by a control system when unpredictable conditions or situations arise in which the controller must respond quickly. { ek'sep·shən ˌhand·liŋ }

exception-item encoding [COMPUT SCI] A technique which allows the uninterrupted flow of a process by the automatic shunting of erroneous records to an error tape for later corrections. { ek'sep·shən ˌīd·əm en'kōd·iŋ }

exception-principle system [COMPUT SCI] A technique which assumes no printouts except when an error is encountered. { ek'sep·shən ˌprin·sə·pəl ˌsis·təm }

exception reporting [COMPUT SCI] A form of programming in which only values that are outside predetermined limits, representing significant changes, are selected for printout at the output of a computer. { ek'sep·shən riˌpórd·iŋ }

excess-fifty code [COMPUT SCI] A number code in which the number n is represented by the binary equivalent of $n + 50$. { 'ekˌses 'fif·tē ˌkōd }

excess-three code [COMPUT SCI] A number code in which the decimal digit n is represented by the four-bit binary equivalent of $n + 3$. Also known as XS-3 code. { ˈekˌses 'thrē ˌkōd }

exchange [COMMUN] **1.** A unit established by a telephone company for the administration of telephone service in a specified area, usually a town, a city, or a village and its environs, and consisting of one or more central offices together with the associated plant used in furnishing telephone service in that area. Also known as local exchange. **2.** Room or building equipped so telephone lines terminating there may be interconnected as required; equipment may include a switchboard or automatic switching apparatus. [COMPUT SCI] The

interchange of contents between two locations. { iks,chānj }

exchangeable disk storage [COMPUT SCI] A type of disk storage, used as a backing storage, in which the disks come in capsules, each containing several disks; the capsules can be replaced during operation of the computer and can be stored until needed. { iks¦chānj·ə·bəl 'disk,stōr·ij }

exchange buffering [COMPUT SCI] An input/output buffering technique that avoids the internal moving of data. { iks'chānj ,bəf·ə·riŋ }

exchange cable [ELEC] Lead covered, non-quadded, paper-insulated cable used within a given area to provide cable pairs between local subscribers and a central office. { iks'chānj ,kā·bəl }

exchange current [ELEC] The magnitude of the current which flows through a galvanic cell when it is operating in a reversible manner. { iks'chānj ,kə·rənt }

exchange line [ELEC] Line joining a subscriber or switchboard to a commercial exchange. { iks'chānj ,līn }

exchange message [COMPUT SCI] A device, placed between a communication line and a computer, in order to take care of certain communication functions and thereby free the computer for other work. { iks'chānj ,mes·ij }

exchange plant [COMMUN] Plant used to serve subscriber's local needs as distinguished from that used for long-distance communication. { iks'chānj ,plant }

exchange sort [COMPUT SCI] A method of arranging records or other types of data into a specified order, in which adjacent pairs of records are exchanged until the correct order is achieved. { iks'chānj ,sȯrt }

excitation [CONT SYS] The application of energy to one portion of a system or apparatus in a manner that enables another portion to carry out a specialized function; a generalization of the electricity and electronics definitions. [ELEC] The application of voltage to field coils to produce a magnetic field, as required for the operation of an excited-field loudspeaker or a generator. [ELECTR] **1.** The signal voltage that is applied to the control electrode of an electron tube. Also known as drive. **2.** Application of signal power to a transmitting antenna. { ,ek ,sī'tā·shən }

excitation anode [ELECTR] An anode used to maintain a cathode spot on a pool cathode of a gas tube when output current is zero. { ,ek ,sī'tā·shən ,an,ōd }

excitation voltage [ELEC] Nominal voltage required for excitation of a circuit. { ,ek,sī'tā·shən ,vōl·tij }

exciter [ELEC] **1.** A small auxiliary generator that provides field current for an alternating-current generator. **2.** *See* exciter lamp. [ELECTR] A crystal oscillator or self-excited oscillator used to generate the carrier frequency of a transmitter. [ELECTROMAG] **1.** The portion of a directional transmitting antenna system that is directly connected to the transmitter. **2.** A loop or probe extending into a resonant cavity or waveguide. { ek'sīd·ər }

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exciter lamp [ELEC] A bright incandescent lamp having a concentrated filament, used to excite a phototube or photocell in sound movie and facsimile systems. Also known as exciter. { ek'sīd·ər ,lamp }

exciter response [ELEC] In electrical rotating machinery, the rate of increase or decrease of the main exciter voltage when resistance is suddenly removed from or inserted in the main exciter field circuit. { ek'sīd·ər ri'spāns }

exciting current *See* magnetizing current. { ek'sīd·iŋ ,kə·rənt }

exciton-induced photoemission [ELECTR] A two-stage process that takes place in an ionic crystal in which color centers are present, in which photon absorption leads to the formation of an exciton, and the exciton then transfers enough energy to color centers to eject photoelectrons from the crystal. { ¦ek·si,tän in ,düst 'fōd·ō·i,mish·əm }

excitron [ELECTR] A single-anode mercury-pool tube provided with means for maintaining a continuous cathode spot. { 'ek·sə,trän }

exclusive-NOR gate *See* equivalence gate. { ik ¦sklü·siv 'nȯr ,gāt }

exclusive or [COMPUT SCI] An instruction which performs the "exclusive or" operation on a bit-by-bit basis for its two operand words, usually storing the result in one of the operand locations. Abbreviated XOR. { ik¦sklü·siv 'ȯr }

exclusive segments [COMPUT SCI] Parts of an overlay program structure that cannot be resident in main memory simultaneously. { ik'sklü·siv 'seg·mənts }

executable module [COMPUT SCI] A file holding a computer program written in machine language so that it is ready to run. { ,ek·sə'kyüd·ə·bəl 'mäj·yül }

executable program [COMPUT SCI] A program that is ready to run on a computer. { ,ek·sə ¦kyüd·ə·bəl 'prō·grəm }

executable statement [COMPUT SCI] A program statement that causes the computer to carry out some operation, in contrast to a declarative statement. { ,ek·sə'kyüd·ə·bəl 'stāt·mənt }

execute [COMPUT SCI] Usually, to run a compiled or assembled program on the computer; by extension, to compile or assemble and to run a source program. { 'ek·sə,kyüt }

execute statement [COMPUT SCI] A program statement that indicates the beginning of a job statement in a job control language. { 'ek·sə ,kyüt ,stāt·mənt }

execution control program [COMPUT SCI] The program delivered by the manufacturer which

permits the computer to handle the programs fed to it. { ˌek·səˈkyü·shən kənˈtrōl ˌprō·grəm }

execution cycle [COMPUT SCI] The time during which an elementary operation takes place. { ˌek·səˈkyü·shən ˌsī·kəl }

execution error detection [COMPUT SCI] The detection of errors which become apparent only during execution time. { ˌek·səˈkyü·shən ˈer·ər diˌtek·shən }

execution time [COMPUT SCI] The time during which actual work, such as addition or multiplication, is carried out in the execution of a computer instruction. { ˌek·səˈkyü·shən ˌtīm }

executive communications [COMPUT SCI] The routine information transmitted to the operator on the status of programs being executed and of the requirements made by these programs of the various components of the system. { igˈzek·yəd·iv kəˌmyü·nəˈkā·shənz }

executive control language [COMPUT SCI] The generic term for a finite set of instructions which enables the programmer to run a program more efficiently. { igˈzek·yəd·iv kənˈtrōl ˌlaŋ·gwij }

executive file-control system [COMPUT SCI] The assignment of intermediate storage devices performed by the computer, and over which the programmer has no control. { igˈzek·yəd·iv ˈfīl kənˌtrōl ˌsis·təm }

executive guard mode [COMPUT SCI] A protective technique which prevents the programmer from accessing, or using, the executive instructions. { igˈzek·yəd·iv ˈgärd ˌmōd }

executive instruction [COMPUT SCI] Instruction to determine how a specially written computer program is to operate. { igˈzek·yəd·iv inˈstrək·shən }

executive logging [COMPUT SCI] The automatic bookkeeping of time utilization by programs of the various components of a computer system. { igˈzek·yəd·iv ˈläg·iŋ }

executive routine [COMPUT SCI] A digital computer routine designed to process and control other routines. Also known as master routine; monitor routine. { igˈzek·yəd·iv rüˌtēn }

executive schedule maintenance [COMPUT SCI] The scheduling of jobs to be run according to priorities as established and maintained by a computer's executive supervisor. { igˈzek·yəd·iv ˈsked·jəl ˌmān·tə·nəns }

executive supervisor [COMPUT SCI] The component of the computer system which controls the sequencing, setup, and execution of the jobs presented to it. { igˈzek·yəd·iv ˈsü·pərˌvīz·ər }

executive system concurrency [COMPUT SCI] The capability of a computer system's executive supervisor to handle more than one job at the same time if these jobs do not require the same components at the same time. { igˈzek·yəd·iv ˌsis·təm kənˈkər·ən·sē }

executive system utilities [COMPUT SCI] The set of programs, such as diagnostic programs or file utility programs, which enables the executive supervisor to handle the jobs efficiently and completely. { igˈzek·yəd·iv ˌsis·təm yüˈtil·əd·ēz }

exhaustion region [ELECTR] A layer in a semiconductor, adjacent to its contact with a metal, in which there is almost complete ionization of atoms in the lattice and few charge carriers, resulting in a space-charge density. { igˈzȯs·chən ˌrē·jən }

exit [COMPUT SCI] **1.** A way of terminating a repeated cycle of operations in a computer program. **2.** A place at which such a cycle can be stopped. { ˈeg·zət }

exogenous electrification [ELEC] The separation of electric charge in a conductor placed in a preexisting electric field, especially applied to the charge separation observed on metal-covered aircraft, resulting from induction effects, and by itself does not create any net total charge on the conductor. { ˌekˈsäj·ə·nəs iˌlek·trə·fəˈkā·shən }

expanded batch [COMPUT SCI] A level of computer processing more complex than basic batch, in which computer programs perform complex computations and produce reports that analyze performance in addition to reporting it. { ikˈspand·əd ˈbach }

expanded position indicator display [ELECTR] Display of an expanded sector from a plan position indicator presentation. { ikˈspand·əd pəˈzish·ən ˈin·dəˌkad·ər diˌsplā }

expanded scope [ELECTR] Magnified portion of a given type of cathode-ray tube presentation. { ikˈspand·əd ˈskōp }

expanded sweep [ELECTR] A cathode-ray sweep in which the movement of the electron beam across the screen is speeded up during a selected portion of the sweep time. { ikˈspand·əd ˈswēp }

expander [ELECTR] A transducer that, for a given input amplitude range, produces a larger output range. { ikˈspand·ər }

expandor [ELECTR] The part of a compandor that is used at the receiving end of a circuit to return the compressed signal to its original form; attentuates weak signals and amplifies strong signals. { ikˈspand·dər }

expansion [ELECTR] A process in which the effective gain of an amplifier is varied as a function of signal magnitude, the effective gain being greater for large signals than for small signals; the result is greater volume range in an audio amplifier and greater contrast range in facsimile. { ikˈspan·shən }

expansion board [COMPUT SCI] A printed circuit board that can be plugged into a computer to provide it with additional peripherals or enhancements, such as increased memory or communications facilities. { ikˈspan·shən ˌbȯrd }

expansion bus [COMPUT SCI] The wiring and protocols that connect a computer's motherboard with the peripheral devices. { ikˈspan·shən ˌbəs }

expansion slot [COMPUT SCI] A location in a computer system where additional facilities, especially circuit boards, can be plugged in to extend the computer's capability. { ikˈspan·shən ˌslät }

expected utility *See* expected value. { ekˈspek·təd yüˈtil·əd·ē }

expected value [SYS ENG] In decision theory, a measure of the value or utility expected to result from a given strategy, equal to the sum

over states of nature of the product of the probability of the state times the consequence or outcome of the strategy in terms of some value or utility parameter. Abbreviated EV. Also known as expected utility (EU). { ek'spek·təd 'val·yü }

expert control system [CONT SYS] A control system that uses expert systems to solve control problems. { ¦ek¡spərt kən'trōl ¡sis·təm }

expert system [COMPUT SCI] A computer system composed of algorithms that perform a specialized, usually difficult professional task at the level of (or sometimes beyond the level of) a human expert. { 'ek¡spərt ¡sis·təm }

explicit programming [CONT SYS] Robotic programming that employs detailed and exact descriptions of the tasks to be performed. { ik'splis·ət 'prō¡gram·iŋ }

exploded file [COMPUT SCI] A file in which more data have been added to each record in order to adapt it to a new application. { ik'splōd·əd 'fīl }

exponential amplifier [ELECTR] An amplifier capable of supplying an output signal proportional to the exponential of the input signal. { ¡ek·spə'nen·chəl 'am·plə¡fī·ər }

exponential horn [ENG ACOUS] A horn whose cross-sectional area increases exponentially with axial distance. { ¡ek·spə'nen·chəl 'hȯrn }

exponential transmission line [ELEC] A two-conductor transmission line whose characteristic impedance varies exponentially with electrical length along the line. { ¡ek·spə'nen·chəl tranz'mish·ən ¡līn }

exposure voltage [ELEC] The voltage at which the document-illuminating lamps are operated during exposure. { ik'spō·zhər ¡vōl·tij }

expression [COMPUT SCI] A mathematical or logical statement written in a source language, consisting of a collection of operands connected by operations in a logical manner. { ik'spresh·ən }

expulsion fuse *See* expulsion-fuse unit. { ik'spəl·shən ¡fyüz }

expulsion-fuse unit [ELEC] A vented fuse unit in which the arc is extinguished by the expulsion of gases generated by the arc and lining of the fuse holder, sometimes with the aid of a spring. Also known as expulsion fuse. { ik'spəl·shən ¡fyüz ¡yü·nət }

extended-area service [COMMUN] Telephone exchange service, without toll charges, that extends over an area where there is a community of interest, often in return for a somewhat higher exchange service rate. { ik¦stend·əd ¦er·ē·ə 'sər·vəs }

extended ASCII [COMMUN] An addition to the standard American Standard Code for Information Interchange, namely, characters 128 through 255; includes letters with diacritics, Greek letters, and special symbols. { ik¦sten·dəd 'as¡kē }

extended binary-coded decimal interchange code [COMPUT SCI] A computer code that uses eight binary positions to represent a single character, giving a possible maximum of 256 characters. Abbreviated EBCDIC. { ik¦stend·əd 'bī¡ner·ē ¦kōd·əd ¦des·məl 'int·ər¡chānj ¡kōd }

extended channel status word [COMPUT SCI] Stored information which follows an input/output interrupt. Abbreviated ECSW. { ik¦stend·əd 'chan·əl 'stad·əs ¡wərd }

extended data out random-access memory [COMPUT SCI] A type of dynamic random-access memory that was optimized for the 66-megahertz bus but largely has been replaced by faster systems. Abbreviated EDO RAM. { ik¦stend·əd ¡dad·ə ¦aůt ¡ran·dəm 'ak¡ses ¡mem·rē }

extended-entry decision table [COMPUT SCI] A decision table in which the condition stub cites the identification of the condition but not the particular values, which are entered directly into the condition entries. { ik¦stend·əd 'en·trē di'sizh·ən ¡tā·bəl }

extended-hybrid FM IBOC [COMMUN] The second of three modes in the FM IBOC system approved by the Federal Communications Commission for use in the United States that increases data capacity by adding additional carriers closer to the analog host signal. The extended-hybrid IBOC mode adds two frequency partitions around the analog carrier, where digital audio date rate can range from 64 to 96 kbits/s, and the corresponding ancillary data rate will range from 83 kbits/s for 64-kbits/s audio to 51 kbits/s for 96-kbits/s audio. { ik'stend·əd 'hī·brəd 'ef¡em 'ībäk }

extended-interaction tube [ELECTR] Microwave tube in which a moving electron stream interacts with a traveling electric field in a long resonator; bandwidth is between that of klystrons and traveling-wave tubes. { ik¦stend·əd int·ə'rak·shən ¡tüb }

extended-precision word [COMPUT SCI] A piece of data of 16 bytes in floating-point arithmetic when additional precision is required. { ik¦stend·əd prə'sizh·ən ¡wərd }

extended time scale *See* slow time scale. { ik¦stend·əd 'tīm ¡skāl }

extender [ELEC] A male or female receptacle connected by a short cable to make a test point more conveniently accessible to a test probe. { ik'sten·dər }

extend flip-flop [COMPUT SCI] A special flag set when there is a carry-out of the most significant bit in the register after an addition or a subtraction. { ik'stend 'flip¡fläp }

extensible language [COMPUT SCI] A programming language which can be modified by adding new features or changing existing ones. { ik'sten·sə·bəl 'laŋ·gwij }

Extensible Markup Language [COMMUN] A set of rules for writing markup languages which provides a robust, machine-readable information protocol that can handle complex objects. Abbreviated XML. { ik¦sten·sə·bəl 'märk¡əp ¡laŋ·gwij }

extensible system [COMPUT SCI] A computer system in which users may extend the basic system by implementing their own languages and subsystems and making them available for others to use. { ik'sten·sə·bəl 'sis·təm }

extension cord [ELEC] A line cord having a plug at one end and an outlet at the other end. { ik'sten·chən ˌkȯrd }

extension mechanism [COMPUT SCI] One of the components of an extensible language which allows the definition of new language features in terms of the primitive facilities of the base language. { ik'sten·chən ˌmek·əˌniz·əm }

extension register [COMPUT SCI] A register that is combined with an accumulator register for calculations involving multiple precision arithmetic. { ik'sten·chən ˌrej·ə·stər }

extent [COMPUT SCI] The physical locations in a mass-storage device or volume allocated for use by a particular data set. { ik'stent }

extern [COMPUT SCI] A pseudoinstruction found in several assembly languages which explicitly tells an assembler that a symbol is external, that is, not defined in the program module. { ek'stərn }

external armature [ELEC] Armature for a machine of special design in which the armature is a ring which rotates around the magnetic poles. { ek'stərn·əl 'är·mə·chər }

external buffer [COMPUT SCI] A buffer storage located outside the computer's main storage, often within a control unit or other peripheral device. { ek'stərn·əl 'bəf·ər }

external declaration [COMPUT SCI] A declarative statement in a computer program that specifies that a symbolic name used in the program is defined in another program. { ek'stərn·əl ˌdek·lə'rā·shən }

external delay [COMPUT SCI] Time during which a computer cannot be operated due to circumstances beyond the reasonable control of the operators and maintenance engineers, such as a failure of the public power supply. { ek'stərn·əl di'lā }

external device [ENG] A piece of equipment that operates in conjunction with and under the control of a central system, such as a computer or control system, but is not part of the system itself. { ek'stərn·əl di'vīs }

external-device address [COMPUT SCI] The address of a component such as a tape drive. { ek ¦stərn·əl di¦vīs 'aˌdres }

external-device control [COMPUT SCI] The capability of an external device to create an interrupt during the execution of a job. { ek¦stərn·əl di ¦vīs kənˌtrōl }

external-device operands [COMPUT SCI] The part of an instruction referring to an external device such as a tape drive. { ek¦stərn·əl di¦vīs 'äp·əˌranz }

external-device response [COMPUT SCI] The signal from an external device, such as a tape drive, that it is not busy. { ek¦stərn·əl di¦vīs riˌspäns }

external error [COMPUT SCI] An error sensed by the computer when this error occurs in a device such as a disk drive. { ek¦stərn·əl 'er·ər }

external interrupt [COMPUT SCI] Any interrupt caused by the operator or by some external device such as a tape drive. { ek¦stərn·əl 'int·əˌrəpt }

external-interrupt status word [COMPUT SCI] The content of a special register which indicates, among other things, the source of the interrupt. { ek¦stərn·əl 'int·əˌrəpt 'stad·əs ˌwərd }

external label [COMPUT SCI] A reference to a variable not defined in a program segment. { ek ¦stərn·əl 'lā·bəl }

externally stored program [COMPUT SCI] A program achieved by wiring plugboards, as in some tabulating equipment. { ek¦stərn·əl·ē ¦stȯrd 'prō·grəm }

external memory [COMPUT SCI] Any storage device not an integral part of a computer system, such as a magnetic tape or disk. { ek¦stərn·əl 'mem·rē }

external photoelectric effect *See* photoemission. { ek¦stərn·əl ˌfō·dō·i'lek·trik iˌfekt }

external Q [ELECTR] The inverse of the difference between the loaded and unloaded Q values of a microwave tube. { ek¦stərn·əl 'kyü }

external reference [COMPUT SCI] In a computer program, a branch or call to a separate independent program or routine. { ek¦stərn·əl 'ref·rəns }

external sensor [CONT SYS] A device that senses information about the environment of a control system but is not part of the system itself. { ek'stərn·əl 'sen·sər }

external signal [COMPUT SCI] Any message to an operator for which no printout is required but which is self-explanatory, such as a light condition indicating whether the equipment is on or off. { ek¦stərn·əl 'sig·nəl }

external sorting [COMPUT SCI] The sorting of a list of items by a computer in which the list is too large to be brought into the memory at one time, and instead is brought into the memory a piece at a time so as to produce a collection of ordered sublists which are subsequently reordered by the computer to produce a single list. { ek¦stərn·əl 'sȯrd·iŋ }

external storage [COMPUT SCI] Large-capacity, slow-access data storage attached to a digital computer and used to store information that exceeds the capacity of main storage. { ek ¦stərn·əl 'stȯr·ij }

external symbol dictionary [COMPUT SCI] A list of external symbols and their relocatable addresses which allows the linkage editor to resolve interprogram references. Abbreviated ESD. { ek ¦stərn·əl 'sim·bəl ˌdik·shəˌner·ē }

external table [COMPUT SCI] A table whose data are located outside a computer program, usually in a separate file. { ek'stərn·əl 'tā·bəl }

extinction voltage [ELECTR] The lowest anode voltage at which a discharge is sustained in a gas tube. { ek'stiŋk·shən ˌvōl·tij }

extract [COMPUT SCI] **1.** To form a new computer word by extracting and putting together selected segments of given words. **2.** To remove from a computer register or memory all items that meet a specified condition. { ik'strakt }

extract instruction [COMPUT SCI] An instruction that requests the formation of a new expression

from selected parts of given expressions. { ik 'strakt in,strək·shən }

extra-high tension [ELECTR] British term for the high direct-current voltage applied to the second anode in a cathode-ray tube, ranging from about 4000 to 50,000 volts in various sizes of tubes. Abbreviated eht. { ¦ek·strə ¦hī 'ten·chən }

extra-high voltage [ELEC] A voltage above 345 kilovolts used for power transmission. Abbreviated ehv. { ¦ek·strə ¦hī 'vōl·tij }

extraneous emission [ELECTR] Any emission of a transmitter or transponder, other than the output carrier fundamental, plus only those sidebands intentionally employed for the transmission of intelligence. { ik'strān·ē·əs ə'mish·ən }

extraneous response [ELECTR] Any undersired response of a receiver, recorder, or other susceptible device, due to the desired signals, undersired signals, or any combination or interaction among them. { ik'strān·ē·əs ri'späns }

extranet [COMPUT SCI] A secure, Internet-based private network that allows organizations to share information with vendors, partners, customers, and so on; access requires either a password or digital encryption. { 'ek·strə,net }

extraterrestrial noise [ELECTROMAG] Cosmic and solar noise; radio disturbances from sources other than those related to the earth. { ¦ek·strə·tə'res·trē·əl 'nōiz }

extremely high frequency [COMMUN] The frequency band from 30,000 to 300,000 megahertz in the radio spectrum. Abbreviated EHF. { ek'strēm·lē 'hī 'frē·kwən·sē }

extremely low frequency [COMMUN] A frequency below 300 hertz in the radio spectrum. Appreviated ELF. { ek'strēm·lē'lō 'frē·kwən·sē }

extrinsic detector [ENG] A semiconductor detector of electromagnetic radiation that is doped with an electrical impurity and utilizes transitions of charge carriers from impurity states in the band gap to nearby energy bands. { ek¦strinz·ik di'tek·tər }

extrinsic photoconductivity [ELECTR] Photoconductivity that occurs for photon energies smaller than the band gap and corresponds to optical excitation from an occupied imperfection level to the conduction band, or to an unoccupied imperfection level from the valence band, of a material. { ek¦strinz·ik ,fō·dō·kän·dək'tiv·əd·ē }

extrinsic photoemission [ELECTR] Photoemission by an alkali halide crystal in which electrons are ejected directly from negative ion vacancies, forming color centers. Also known as direct ionization. { ek¦strin·sik ,fōd·ō·i'mish·ən }

extrinsic properties [ELECTR] The properties of a semiconductor as modified by impurities or imperfections within the crystal. { ek¦strinz·ik 'präp·ərd·ēz }

extrinsic semiconductor [ELECTR] A semiconductor whose electrical properties are dependent on impurities added to the semiconductor crystal, in contrast to an intrinsic semiconductor, whose properties are characteristic of an ideal pure crystal. { ek¦strinz·ik 'sem·i·kən,dək·tər }

e-zine [COMPUT SCI] A Web-published magazine. { 'ē ,zēn }

F

F *See* farad.
fA *See* femtoampere.
fabrication [ENG] **1.** The manufacture of parts, usually structural or electromechanical parts. **2.** The assembly of parts into a structure. { ˌfab·riˈkā·shən }
face *See* faceplate. { fās }
face-bonding [ELECTR] Method of assembling hybrid microcircuits wherein semiconductor chips are provided with small mounting pads, turned facedown, and bonded directly to the ends of the thin-film conductors on the passive substrate. { ˈfās ˌbänd·iŋ }
faceplate [ELECTR] The transparent or semitransparent glass front of a cathode-ray tube, through which the image is viewed or projected; the inner surface of the face is coated with fluorescent chemicals that emit light when hit by an electron beam. Also known as face. { ˈfāsˌplāt }
facility assignment [COMPUT SCI] The allocation of core memory and external devices by the executive as required by the program being executed. { fəˈsil·əd·ē əˌsīn·mənt }
facility dispersion [COMMUN] The distribution of circuits between two points over more than one physical or geographic route to reduce the likelihood of a trunk group being put completely out of service by facility damage or other circuit failure. { fəˈsil·əd·ē diˈspər·zhən }
facsimile [COMMUN] **1.** A system of communication in which a transmitter scans a photograph, map, or other fixed graphic material and converts the information into signal waves for transmission by wire or radio to a facsimile receiver at a remote point. Also known as fax; phototelegraphy; radiophoto; telephoto; telephotography; wirephoto. **2.** A photograph transmitted by radio to a facsimile receiver. Also known as radiophoto. { fakˈsim·əˌlē }
facsimile modulation [COMMUN] Process in which the amplitude, frequency, or phase of a transmitted wave is varied with time in accordance with a facsimile transmission signal. { fakˈsim·əˌlē ˌmäj·əˈlā·shən }
facsimile posting [COMPUT SCI] The process of transferring by a duplicating process a printed line of information from a report, such as a listing of transactions prepared on an accounting machine, to a ledger or other recorded sheet. { fakˈsim·əˌlē ˈpōst·iŋ }
facsimile receiver [ELECTR] The receiver used to translate the facsimile signal from a wire or radio communication channel into a facsimile record of the subject copy. { fakˈsim·əˌlē riˈsē·vər }
facsimile recorder [ELECTR] The section of a facsimile receiver that performs the final conversion of electric signals to an image of the subject copy on the record medium. { fakˈsim·əˌlē riˈkȯrd·ər }
facsimile signal [COMMUN] The picture signal produced by scanning the subject copy in a facsimile transmitter. { fakˈsim·əˌlē ˌsig·nəl }
facsimile signal level [ELECTR] Maximum facsimile signal power or voltage (root mean square or direct current) measured at any point in a facsimile system. { fakˈsim·əˌlē ˈsig·nəl ˌlev·əl }
facsimile synchronizing [ELECTR] Maintenance of predetermined speed relations between the scanning spot and the recording spot within each scanning line. { fakˈsim·əˌlē ˈsiŋ·krəˌniz·iŋ }
facsimile telegraph [COMMUN] A telegraph system designed to transmit pictures. { fakˈsim·əˌlē ˈtel·əˌgraf }
facsimile transmitter [ELECTR] The apparatus used to translate the subject copy into facsimile signals suitable for delivery over a communication system. { fakˈsim·əˌlē tranzˈmid·ər }
fade-out [COMMUN] A gradual and temporary loss of a received radio or television signal due to magnetic storms, atmospheric disturbances, or other conditions along the transmission path. { ˈfādˌaůt }
fader [ELECTR] A multiple-unit level control used for gradual changeover from one audio video source. { ˈfād·ər }
fading [COMMUN] Variations in the field strength of a radio signal that are caused by changes in the transmission medium. { ˈfād·iŋ }
fading margin [COMMUN] **1.** Number of decibels of attenuation which may be added to a specified radio-frequency propagation path before the signal-to-noise ratio of a specified channel falls below a specified minimum in order to avoid disruption of service. **2.** Allowance made in radio system planning to accommodate estimated fading. { ˈfād·iŋ ˌmär·jən }
Fahnestock clip [ELEC] A spring-type terminal to which a temporary connection can readily be made. { ˈfanˌstäk ˌklip }
fail-safe system [ENG] A system designed so that failure of power, control circuits, structural

members, or other components will not endanger people operating the system or other people in the vicinity. { 'fāl ¦sāf ,sis·təm }

fail-safe tape *See* incremental dump tape. { 'fāl ¦sāf ,tāp }

fail soft [ENG] A failure in the performance of a system component that neither results in immediate or major interruption of the system operation as a whole nor adversely affects the quality of its products. { 'fāl ¦sóft }

fail-soft system [COMPUT SCI] A computer system with automatic controls that allow function to continue after a malfunction and, if necessary, permit the shutdown of the system without loss of data. { 'fāl ¦sóft ,sis·təm }

failure logging [COMPUT SCI] The automatic recording of the state of various components of a computer system following detection of a machine fault; used to initiate corrective procedures, such as repeating attempts to read or write a magnetic tape, and to aid customer engineers in diagnosing errors. { 'fāl·yər ,läg·iŋ }

failure rate [ENG] The probability of failure per unit of time of items in operation; sometimes estimated as a ratio of the number of failures to the accumulated operating time for the items. { 'fāl·yər ,rāt }

fallback [COMPUT SCI] The system, electronic or manual, which is substituted for the computer system in case of breakdown. { 'fȯl,bak }

fallback switch [COMMUN] A mechanical switch to transfer a communications path from a primary device to an identical standby device in the event of a primary device failure. { 'fȯl,bak ,swich }

fallout [ELECTR] Failure of electronic components during burn-in. { 'fȯl,aůt }

fall time [ELEC] Measure of time required for a circuit to change its output from a high level to a low level. { 'fȯl ,tīm }

false alarm [ELECTR] In radar, an indication of a detected target even though one does not exist, due to noise or interference levels exceeding the set threshold of detection. { ¦fȯls ə'lärm }

false drop *See* false retrieval. { ¦fȯls 'dräp }

false retrieval [COMPUT SCI] An item retrieved in an automatic library search which is unrelated or vaguely related to the subject of the search. Also known as false drop. { ¦fȯls ri'trē·vəl }

false sorts [COMPUT SCI] Entries irrelevant to the subject sought which are retrieved in a search. { ¦fȯls 'sȯrts }

false target [ELECTR] In radar, a contact (target) estimated to be where none exists, generally as the result of ambiguity in the data processing. { ¦fȯls 'tär·gət }

false-target generator [ELECTR] An electronic countermeasure device that generates a delayed return signal on an enemy radar frequency to give erroneous position information. { ¦fȯls ¦tär·gət 'jen·ə,räd·ər }

FAMOS device *See* floating-gate avalanche-injection metal-oxide semiconductor device. { 'fā,mȯs di'vīs }

fan antenna [ELECTROMAG] An array of folded dipoles of different length forming a wide-band ultra-high-frequency or very-high-frequency antenna. { 'fan an,ten·ə }

fan beam [ELECTROMAG] **1.** A radio beam having an elliptically shaped cross section in which the ratio of the major to the minor axis usually exceeds 3 to 1; the beam is broad in the vertical plane and narrow in the horizontal plane. **2.** A radar beam having the shape of a fan. { 'fan ,bēm }

fanfold [COMPUT SCI] Continuous paper that is perforated at page boundaries and can be folded back and forth at the perforations to form a stack. { 'fan,fōld }

fan-in [ELECTR] The number of inputs that can be connected to a logic circuit. { 'fan,in }

fan marker *See* fan-marker beacon. { 'fan ,märk·ər }

fan-marker beacon [NAV] A very-high frequency radio facility having a vertically directed fan beam interesecting an airway to provide a fix. Also known as fan marker; radio fan-marker beacon. { 'fan ,märk·ər ,bē·kən }

fanned-beam antenna [ELECTROMAG] Unidirectional antenna so designed that transverse cross sections of the major lobe are approximately elliptical. { ¦fand ¦bēm an,ten·ə }

fanning beam [ELECTROMAG] Narrow antenna beam which is repeatedly scanned over a limited arc. { 'fan·iŋ ,bēm }

fanning strip [ELEC] Insulated board, often of wood, which serves to spread out the wires of a cable for distribution to a terminal board. { 'fan·iŋ ,strip }

fan-out [ELECTR] The number of parallel loads that can be driven from one output mode of a logic circuit. { 'fan,aůt }

FAQ *See* Frequently Asked Questions.

farad [ELEC] The unit of capacitance in the meter-kilogram-second system, equal to the capacitance of a capacitor which has a potential difference of 1 volt between its plates when the charge on one of its plates is 1 coulomb, there being an equal and opposite charge on the other plate. Symbolized F. { 'fa,rad }

Faradaic current *See* Faradic current. { 'far·ə ,dā·ik ,kə·rənt }

Faraday birefringence [OPTICS] Difference in the indices of refraction of left and right circularly polarized light passing through matter parallel to an applied magnetic field; it is responsible for the Faraday effect. { 'far·ə,dā ,bī·ri'frin·jəns }

Faraday cage *See* Faraday shield. { 'far·ə,dā ,kāj }

Faraday cylinder [ELEC] **1.** A closed, or nearly closed, hollow conductor, usually grounded, within which apparatus is placed to shield it from electrical fields. **2.** A nearly closed, insulated, hollow conductor, usually shielded by a second grounded cylinder, used to collect and detect a beam of charged particles. { 'far·ə,dā ,sil·ən·dər }

Faraday dark space [ELECTR] The relatively nonluminous region that separates the negative glow from the positive column in a cold-cathode glow-discharge tube. { 'far·ə,dā 'därk ,spās }

supporting grids covered with a lead oxide paste, immersed in weak sulfuric acid. Also known as pasted-plate storage battery. { 'fȯr 'stȯr·ij ˌbad·ə·rē }

fax *See* facsimile. { faks }

FB data set [COMPUT SCI] A data set which has F-format logical records and whose physical records are all some multiple of the size of the logical record, except possibly for a few truncated blocks. Also known as blocked F-format data set. { ¦ef¦bē ˌdad·ə ˌset }

FBM data set [COMPUT SCI] An FB data set which has a machine-control (M) character in its first byte of information. { ¦ef¦bē¦em ˌdad·ə ˌset }

FBSA data set [COMPUT SCI] An FBS data set which has an ASCII (American Standard Code for Information Interchange) control (A) character in its first byte of information. { ¦ef¦bē¦es¦ā ˌdad·ə ˌset }

FBS data set [COMPUT SCI] An FB data set which has at most one truncated block, which must be the last one in the data set. Also known as standard blocked F-format data set. { ¦ef¦bē¦es ˌdad·ə ˌset }

F connector [ELECTR] A plug and socket for interconnecting coaxial cables; commonly used to interconnect television receivers and cable or antenna sources. { 'ef kəˌnek·tər }

FDDI *See* fiber-optic data distribution interface.

F-display [ELECTR] A radar display format in which the target appears as a spot in the center when the antenna of a tracking radar is aimed directly at it, with any displacement indicating pointing error. Also known as F-indicator; F-scan; F-scope. { 'ef diˌsplā }

FDM *See* frequency-division multiplexing.

FDMA *See* frequency-division multiple access.

feasibility study [SYS ENG] **1.** A study of applicability or desirability of any management or procedural system from the standpoint of advantages versus disadvantages in any given case. **2.** A study to determine the time at which it would be practicable or desirable to install such a system when determined to be advantageous. **3.** A study to determine whether a plan is capable of being accomplished successfully. { ˌfēz·ə'bil·əd·ē ˌstəd·ē }

feasibility test [SYS ENG] A test conducted to obtain data in support of a feasibility study or to demonstrate feasibility. { ˌfēz·ə'bil·əd·ē ˌtest }

feasible solution [COMPUT SCI] In linear programming, any set of values for the variables x_j, $j = 1, 2, \ldots, n$, that (1) satisfy the set of restrictions

$$\sum_{j=1}^{n} a_{ij}x_j \leq b_i,\ i = 1, 2, \ldots, m$$

$$\left(\text{alternatively, } \sum_{j=1}^{n} a_{ij}x_j \leq b_i, \text{ or } \sum_{j=1}^{n} a_{ij}x_j \leq b_i\right)$$

where the b_i are numerical constants known collectively as the right-hand side and the a_{ij} are coefficients of the variables x_j, and (2) satisfy the restrictions $x_j \geq 0$. { 'fēz·ə·bəl sə'lü·shən }

feature [COMPUT SCI] In automatic pattern recognition, a property of an image that is useful for its interpretation. { 'fē·chər }

feature extraction-classification model [COMPUT SCI] A method of automatic pattern recognition in which recognition is achieved by making measurements on the patterns to be recognized, and then deriving features from these measurements. { 'fē·chər ikˌstrak·shən ˌklas·ə·fə¦kā·shən ˌmäd·əl }

Federal Telecommunications System [COMMUN] System of commercial telephone lines, leased by the government, for use between major government installations for official telecommunications. { 'fed·rəl ˌtel·ə·kəˌmyü·nə'kā·shənz ˌsis·təm }

fedsim star [COMPUT SCI] The starlike shape that is characteristic of the Kiviat graph of a well-balanced computer system. { 'fedˌsim ˌstär }

feed [COMPUT SCI] **1.** To supply the material to be operated upon to a machine. **2.** A device capable of so feeding. [ELECTR] To supply a signal to the input of a circuit, transmission line, or antenna. [ELECTROMAG] The part of a radar antenna that is connected to or mounted on the end of the transmission line and serves to radiate radio-frequency electromagnetic energy to the reflector or receive energy therefrom; in multiple-element (array) antennas, the constrained network, radiation means or digital means for distributing the energy to the radiating elements and collecting the energy received by them. { fēd }

feedback [ELECTR] The return of a portion of the output of a circuit or device to its input. { 'fēd ˌbak }

feedback admittance [ELECTR] Short-circuit transadmittance from the output electrode to the input electrode of an electron tube. { 'fēd ˌbak əd'mit·əns }

feedback amplifier [ELECTR] An amplifier in which a passive network is used to return a portion of the output signal to its input so as to change the performance characteristics of the amplifier. { 'fēdˌbak 'am·pləˌfī·ər }

feedback branch [CONT SYS] A branch in a signal-flow graph that belongs to a feedback loop. { 'fēdˌbak ˌbranch }

feedback circuit [ELECTR] A circuit that returns a portion of the output signal of an electronic circuit or control system to the input of the circuit or system. { 'fēdˌbak ˌsər·kət }

feedback compensation [CONT SYS] Improvement of the response of a feedback control system by placing a compensator in the feedback path, in contrast to cascade compensation. Also known as parallel compensation. { 'fēdˌbak ˌkäm·pənˌsā·shən }

feedback control loop *See* feedback loop. { 'fēd ˌbak kən'trōl ˌlüp }

feedback control signal [CONT SYS] The portion of an output signal which is retransmitted as an input signal. { 'fēd,bak kən'trōl ,sig·nəl }

feedback control system [CONT SYS] A system in which the value of some output quantity is controlled by feeding back the value of the controlled quantity and using it to manipulate an input quantity so as to bring the value of the controlled quantity closer to a desired value. Also known as closed-loop control system. { 'fēd ,bak kən'trōl ,sis·təm }

feedback factor [ELECTR] The fraction of the output voltage of an oscillator which is applied to the feedback network. { 'fēd,bak ,fak·tər }

feedback loop [CONT SYS] A closed transmission path or loop that includes an active transducer and consists of a forward path, a feedback path, and one or more mixing points arranged to maintain a prescribed relationship between the loop input signal and the loop output signal. Also known as feedback control loop. { 'fēd,bak ,lüp }

feedback oscillator [ELECTR] An oscillating circuit, including an amplifier, in which the output is fed back in phase with the input; oscillation is maintained at a frequency determined by the values of the components in the amplifier and the feedback circuits. { 'fēd,bak ,äs·ə,lād·ər }

feedback regulator [CONT SYS] A feedback control system that tends to maintain a prescribed relationship between certain system signals and other predetermined quantities. { 'fēd,bak ,reg·yə,lād·ər }

feedback transfer function [CONT SYS] In a feedback control loop, the transfer function of the feedback path. { 'fēd,bak 'tranz·fər ,fəŋk·shən }

feedback winding [ELECTR] A winding to which feedback connections are made in a magnetic amplifier. { 'fēd,bak ,wīnd·iŋ }

feeder [ELEC] **1.** A transmission line used between a transmitter and an antenna. **2.** A conductor, or several conductors, connecting generating stations, substations, or feeding points in an electric power distribution system. **3.** A group of conductors in an interior wiring system which link a main distribution center with secondary or branch-circuit distribution centers. { 'fēd·ər }

feeder cable [COMMUN] In communications practice, a cable extending from the central office along a primary route (main feeder cable) or from a main feeder cable along a secondary route (branch feeder cable) and providing connections to one or more distribution cables. { 'fēd·ər ,kā·bəl }

feeder distribution center [COMMUN] Distribution center at which feeders or subfeeders are connected. { 'fēd·ər dis·trə'byü·shən ,sen·tər }

feeder panel [ELEC] The part of a switchboard in an electric power distribution system where feeder connections are made. { 'fēd·ər ,pan·əl }

feeder reactor [ELEC] A small inductor connected in series with a feeder in order to limit and localize the disturbances due to faults on the feeder. { 'fēd·ər rē,ak·tər }

feedforward control [CONT SYS] Process control in which changes are detected at the process input and an anticipating correction signal is applied before process output is affected. { 'fēd 'fȯr·wərd kən,trōl }

feed holes [COMPUT SCI] Holes along the edges of continuous-feed computer paper that are engaged by sprockets to move the paper and maintain alignment during printing. { 'fēd ,hōlz }

feed horn [ELECTROMAG] A device located at the focus of a receiving paraboloidal antenna that acts as a receiver of radio waves which the antenna collects, focuses, and couples to transmission lines to the amplifier. { 'fēd ,hȯrn }

feed reel [ENG] The reel from which paper tape or magnetic tape is being fed. { 'fēd ,rēl }

feed shelf [COMPUT SCI] **1.** A device for supporting documents for manual sensing. **2.** The first few feet of a tape reel, used to prime the tape drive. { 'fēd ,shelf }

feed-tape [COMPUT SCI] A mechanism which will feed tape to be read or sensed. { 'fēd,tāp }

feedthrough [ELEC] A conductor that connects patterns on opposite sides of a printed circuit board. Also known as interface connection. { 'fēd ,thrü }

feedthrough capacitor [ELEC] A feedthrough terminal that provides a desired value of capacitance between the feedthrough conductor and the metal chassis or panel through which the conductor is passing; used chiefly for bypass purposes in ultra-high-frequency circuits. { 'fēd ,thrü kə'pas·əd·ər }

feedthrough insulator *See* feedthrough terminal. { 'fēd,thrü 'in·sə,lād·ər }

feedthrough terminal [ELEC] An insulator designed for mounting in a hole in a panel, wall, or bulkhead, with a conductor in the center on the insulator to permit feeding electricity through the partition. Also known as feedthrough insulator. { 'fēd,thrü 'tərm·ən·əl }

female connector [ELEC] A connector having one or more contacts set into recessed openings; jacks, sockets, and wall outlets are examples. { 'fē,māl kə'nek·tər }

femitrons [ELECTR] Class of field-emission microwave devices. { 'fem·ə,tränz }

femtoampere [ELEC] A unit of current equal to 10^{-15} ampere. Abbreviated fA. { 'fem·tō'am·pir }

femtovolt [ELEC] A unit of voltage equal to 10^{-15} volt. Abbreviated fV. { 'fem·tō,vōlt }

fence [ENG] **1.** A line of data-acquisition or tracking stations used to monitor orbiting satellites. **2.** A line of radar or radio stations for detection of satellites or other objects in orbit. **3.** A line or network of early-warning radar stations. **4.** A concentric steel fence erected around a ground radar transmitting antenna to serve as an artificial horizon and suppress ground clutter that would otherwise drown out weak signals returning at a low angle from a target. { fens }

fence cell [COMPUT SCI] A criterion for dividing a list into two equal or nearly equal parts in the course of a binary search. { 'fens ,sel }

Ferranti effect [ELEC] A rise in voltage occurring at the end of a long transmission line when its load is disconnected. { fə'ran·tē i,fekt }

ferreed switch [ELEC] A switch whose contacts are mounted on magnetic blades or reeds sealed into an evacuated tubular glass housing, the contacts being operated by external electromagnets or permanent magnets. { 'fe,rēd ,swich }

ferrimagnetic amplifier [ELECTR] A microwave amplifier using ferrites. { ,fe·ri·mag'ned·ik 'am·plə,fī·ər }

ferristor [ELECTR] A miniature, two-winding, saturable reactor that operates at a high carrier frequency and may be connected as a coincidence gate, current discriminator, free-running multivibrator, oscillator, or ring counter. { fə'ris·tər }

ferrite attenuator *See* ferrite limiter. { 'fe,rīt ə'ten·yə,wād·ər }

ferrite bead [ELECTR] Magnetic information storage device consisting of ferrite powder mixtures in the form of a bead fired on the current-carrying wires of a memory matrix. { 'fe,rīt 'bēd }

ferrite circulator [ELECTROMAG] A combination of two dual-mode transducers and a 45° ferrite rotator, used with rectangular waveguides to control and switch microwave energy. Also known as ferrite phase-differential circulator. { 'fe,rīt 'sər·kyə,lād·ər }

ferrite core [ELECTR] A magnetic core made of ferrite material. Also known as dust core; powdered-iron core. { 'fe,rīt 'kȯr }

ferrite-core memory [ELECTR] A magnetic memory consisting of a matrix of tiny toroidal cores molded from a square-loop ferrite, through which are threaded the pulse-carrying wires and the sense wire. { 'fe,rīt ,kȯr 'mem·rē }

ferrite device [ELEC] An electrical device whose principle of operation is based upon the use of ferrites in powdered, compressed, sintered form, making use of their ferrimagnetism and their high electrical resistivity, which makes eddy-current losses extremely low at high frequencies. { 'fe ,rīt di,vīs }

ferrite isolator [ELECTROMAG] A device consisting of a ferrite rod, centered on the axis of a short length of circular waveguide, located between rectangular-waveguide sections displaced 45° with respect to each other, which passes energy traveling through the waveguide in one direction while absorbing energy from the opposite direction. Also known as Faraday rotation isolator. { 'fe,rīt 'ī·sə,lād·ər }

ferrite limiter [ELECTROMAG] A passive, low-power microwave limiter having an insertion loss of less than 1 decibel when operating in its linear range, with minimum phase distortion; the input signal is coupled to a single-crystal sample of either yttrium iron garnet or lithium ferrite, which is biased to resonance by a magnetic field. Also known as ferrite attenuator. { 'fe,rīt 'lim·əd·ər }

ferrite phase-differential circulator *See* ferrite circulator. { 'fe,rīt ¦fāz dif·ə¦ren·chəl 'sər·kyə,lād·ər }

ferrite-rod antenna [ELECTROMAG] An antenna consisting of a coil wound on a rod of ferrite; used in place of a loop antenna in radio receivers. Also known as ferrod; loopstick antenna. { 'fe,rīt ¦räd an'ten·ə }

ferrite rotator [ELECTROMAG] A gyrator consisting of a ferrite cylinder surrounded by a ring-type permanent magnet, inserted in a waveguide to rotate the plane of polarization of the electromagnetic wave passing through the waveguide. { 'fe,rīt 'rō,tād·ər }

ferrite switch [ELECTROMAG] A ferrite device that blocks the flow of energy through a waveguide by rotating the electric field vector 90°; the switch is energized by sending direct current through its magnetizing coil; the rotated electromagnetic wave is then reflected from a reactive mismatch or absorbed in a resistive card. { 'fe,rīt 'swich }

ferrite-tuned oscillator [ELECTR] An oscillator in which the resonant characteristic of a ferrite-loaded cavity is changed by varying the ambient magnetic field, to give electronic tuning. { 'fe ,rīt ¦tünd 'äs·ə,lād·ər }

ferroacoustic storage [ELECTR] A delay-line type of storage consisting of a thin tube of magnetostrictive material, a central conductor passing through the tube, and an ultrasonic driving transducer at one end of the tube. { ¦fe·rō·ə ¦küs·tik 'stȯr·ij }

ferrod *See* ferrite-rod antenna. { 'fe,räd }

ferroelectric [SOLID STATE] A crystalline substance displaying ferroelectricity, such as barium titanate, potassium dihydrogen phosphate, and Rochelle salt; used in ceramic capacitors, acoustic tranducers, and dielectric amplifiers. Also known as Rochelle-electric. { ¦fe·rō·i'lek·trik }

ferroelectric converter [ELEC] A converter that transforms thermal energy into electric energy by utilizing the change in the dielectric constant of a ferroelectric material when heated beyond its Curie temperature. { ¦fe·rō·i'lek·trik kən'vərd·ər }

ferroelectric hysteresis [ELEC] The dependence of the polarization of ferroelectric materials not only on the applied electric field but also on their previous history; analogous to magnetic hysteresis in ferromagnetic materials. Also known as dielectric hysteresis; electric hysteresis. { fe·rō·i'lek·trik ,his·tə'rē·səs }

ferroelectric hysteresis loop [ELEC] Graph of polarization or electric displacement versus applied electric field of a material displaying ferroelectric hysteresis. { ¦fe·rō·i'lek·trik ,his·tə'rē·səs ,lüp }

ferroelectricity [SOLID STATE] Spontaneous electric polarization in a crystal; analogous to ferromagnetism. { ¦fe·rō·i'lek·tris·əd·ē }

ferroelectric liquid-crystal display [ELECTR] An electronic display that employs a liquid crystal that is ferroelectric, such as smectic C*, which has two different stable molecular configurations; polarizers are positioned such that one state is optically transmissive while the other is dark. { ,fer·ō·i¦lek·trik ¦lik·wəd ¦kris·təl dis¦plā }

ferromagnetic amplifier [ELECTR] A parametric amplifier based on the nonlinear behavior of ferromagnetic resonance at high radio-frequency

power levels; incorrectly known as garnet maser. { |fe·rō·mag|ned·ik 'am·plə,fī·ər }

ferromagnetic film See magnetic thin film. { |fe·rō·mag|ned·ik 'ilm }

ferromagnetic resonance |SOLID STATE| Magnetic resonance of a ferromagneti material { |fe·rō·mag|ned·ik 'rez·ən·əns }

ferromagnetics |ELECTR| The science that deals with the storage of binary information and the logical control of pulse sequences through the utilization of the magnetic polarization properties of materials. { |fe·rō·mag|ned·iks }

ferromagnetism |SOLID STATE| A property, exhibited by certain metals, alloys, and compounds of the transition (iron group rare-earth and actinide elements, in which the internal magnetic moments spontaneously organize in a common direction; gives rise to a permeability considerably greater than that of vaccum, and to magnetic hysteresis { |fe·rō·magnə,tiz·əm }

ferroresonant circuit |ELECTR| A resonant circuit in which a saturable reactor provides nonlinear characteristics, with tuning being accomplished by varying circuit voltage or current. { |fe·rō'rez·ən·ənt 'sər·kət }

ferroresonant power supply |ELECTR| A transformer-based power supply, employed in high-current applications such as battery chargers, that uses nonlinear magnetic properties and a resonant circuit to regulate the output current. { ,fe·rō,rez·ən·ənt 'paù·ər sə,plī }

ferroresonant static inverter |ELEC| A static inverter consisting of a simple square-wave inverter system and a tuned output transformer that performs filtering, voltage regulation, and current limiting. { |fe·rō'rez·ən·ənt |stad·ik in'vərd·ər }

FET See field-effect transistor.

fetch |COMPUT SCI| To locate and load into main memory a requested load module, relocating it as necessary and leaving it in a ready-to-execute condition. { fech }

fetch ahead See instruction lookahead. { |fech ə'hed }

fetch bit |COMPUT SCI| The fifth bit in a storage key; the value of the fetch bit can protect a stored block from destruction or from being accessed by unauthorized programs. { 'fech ,bit }

fetch cycle |COMPUT SCI| The period during which a machine language instruction is read from memory into the control section of the central processing unit. { 'fech ,sī·kəl }

F format |COMPUT SCI| **1.** In data management, a fixed-length logical record format. **2.** In FORTRAN, a real variable formatted as $F\mu.d$, where μ is the width of the field and d represents the number of digits to appear after the decimal point. { 'ef ,fȯr·mat }

fiber |OPTICS| A transparent threadlike object made of glass or clear plastic, used to conduct light along selected paths. { 'fī·bər }

fiber bundle |OPTICS| A flexible bundle of glass or other transparent fibers, parallel to each other, used in fiber optics to transmit a complete image from one end of the bundle to the other. { 'fī·bər ,bən·dəl }

fiber-optic circuit |COMMUN| A path for data transmission in which light acts as the information carrier and is transmitted by total internal reflection through a transparent optical waveguide. { |fī·bər |äp·tik 'sər·kət }

fiber-optic current sensor |ENG| An instrument for measuring currents on high-voltage lines, in which the magnetic field associated with the current changes the phase of light traveling through an optical fiber, and the phase change is measured in an interferometer. { 'fī·bər |äp·tik 'kə·rənt ,sen·sər }

fiber-optic data distribution interface |COMMUN| A set of standards for high-speed fiber-optic local-area networks. Abbreviated FDDI. { |fī·bər |äp·tik |dad·ə ,dis·trə|byü·shən 'in·tər,fās }

fiber optics |OPTICS| The technique of transmitting light through long, thin, flexible fibers of glass, plastic, or other transparent materials; bundles of parallel fibers can be used to transmit complete images. { 'fī·bər ,äp·tiks }

fiber-optic sensor See optical-fiber sensor. { 'fī·bər |äp·tik 'sen·sər }

fiber waveguide See optical waveguide. { 'fī·bər 'wāv,gīd }

fidelity |COMMUN| The degree to which a system accurately reproduces at its output the essential characteristics of the signal impressed on its input. { fə'del·əd·ē }

field |COMPUT SCI| **1.** A location in a record in a database that contains a specific piece of information **2.** A specified area on a geographical user interface for the input of a particular category of data. |ELECTR| One of the equal parts into which a frame is divided in interlaced scanning for television; includes one complete scanning operation from top to bottom of the picture and back again. { fēld }

fieldata code |COMMUN| A standardized military data transmission code, seven data bits plus one parity bit. { 'fēl,dad·ə ,kōd }

field delimiter |COMPUT SCI| Any symbol, such as a slash, colon, tab, or space, which enables an assembler to recognize the end of a field. { 'fēld də,lim·əd·ər }

field designator |COMPUT SCI| A character generally placed at the beginning of a field to specify the nature of the data contained in it. { 'fēld |dez·ig,nād·ər }

field-desorption microscope |ELECTR| A type of field-ion microscope in which the tip specimen is

imaged by ions that are field-desorbed or field-evaporated directly from the surface rather than by ions obtained from an externally supplied gas. { 'fēld dē,sȯrp·shən ,mī·krə,skōp }

field discharge [ELECTR] A spark discharge due to high potential across a gap. { 'fēld ¦dis,chärj }

field-discharge switch [ELEC] A special type of switch that is connected in series with the field winding of an electrical machine, and that is operated to connect a resistor in parallel with the field winding before the main supply contacts are opened, in order to prevent the self-induced electromotive force in the field winding from reaching dangerous levels. { 'fēld ¦dis,chärj ,swich }

field effect [ELECTR] The local change from the normal value that an electric field produces in the charge-carrier concentration of a semiconductor. { 'fēld i,fekt }

field-effect capacitor [ELECTR] A capacitor in which the effective dielectric is a region of semiconductor material that has been depleted or inverted by the field effect. { 'fēld i,fekt kə'pas·əd·ər }

field-effect device [ELECTR] A semiconductor device whose properties are determined largely by the effect of an electric field on a region within the semiconductor. { 'fēld i,fekt di,vīs }

field-effect diode [ELECTR] A semiconductor diode in which the charge carriers are of only one polarity. { 'fēld i,fekt 'dī,ōd }

field-effect phototransistor [ELECTR] A field-effect transistor that responds to modulated light as the input signal. { 'fēld i,fekt ¦fōd·ō·tran'zis·tər }

field-effect tetrode [ELECTR] Four-terminal device consisting of two independently terminated semiconducting channels so displaced that the conductance of each is modulated along its length by the voltage conditions in the other. { 'fēld i,fekt 'te,trōd }

field-effect transistor [ELECTR] A transistor in which the resistance of the current path from source to drain is modulated by applying a transverse electric field between grid or gate electrodes; the electric field varies the thickness of the depletion layer between the gates, thereby reducing the conductance. Abbreviated FET. { 'fēld i,fekt tran'zis·tər }

field-effect-transistor resistor [ELECTR] A field-effect transistor in which the gate is generally tied to the drain; the resultant structure is used as a resistance load for another transistor. { 'fēld i,fekt tran¦zis·tər ri¦zis·tər }

field-effect varistor [ELECTR] A passive, two-terminal, nonlinear semiconductor device that maintains constant current over a wide voltage range. { 'fēld i,fekt və'ris·tər }

field emission [ELECTR] The emission of electrons from the surface of a metallic conductor into a vacuum (or into an insulator) under influence of a strong electric field; electrons penetrate through the surface potential barrier by virtue of the quantum-mechanical tunnel effect. Also known as cold emission. { 'fēld ə,mish·ən }

field-emission display [ELECTR] A flat-panel electronic display in which electrons are extracted from an array of cold-cathode emitters by applying a voltage between the cathode and a control electrode, and the electrons are then accelerated without deflection over a distance of less than 1 millimeter before colliding with a phosphor-coated flat faceplate. { 'fēld i ,mish·ən di,splā }

field-emission microscope [ELECTR] A device that uses field emission of electrons or of positive ions (field-ion microscope) to produce a magnified image of the emitter surface on a fluorescent screen. { 'fēld ə¦mish·ən 'mī·krə ,skōp }

field-emission tube [ELECTR] A vacuum tube within which field emission is obtained from a sharp metal point; must be more highly evacuated than an ordinary vacuum tube to prevent contamination of the point. { 'fēld ə¦mish·ən ,tüb }

field-emitter array [ELECTR] An array of pyramidal silicon structures, with spacing on the order of 10 micrometers, designed for field emission of electrons into a vacuum. { ¦fēld i¦mid·ər ə'rā }

field engineer [COMPUT SCI] A professional who installs computer hardware on customers' premises, performs routine preventive maintenance, and repairs equipment when it is out of order. Also known as field service representative. { 'fēld en·jə,nir }

field-enhanced emission [ELECTR] An increase in electron emission resulting from an electric field near the surface of the emitter. { ¦fēld in ¦hanst i'mish·ən }

field-free emission current [ELECTR] Electron current emitted by a cathode when the electric field at the surface of the cathode is zero. Also known as zero-field emission. { 'fēld ,frē i'mish·ən ,kə·rənt }

field frequency [ELECTR] The number of fields transmitted per second in a video system; equal to the frame frequency multiplied by the number of fields that make up one frame. Also known as field repetition rate. { 'fēld ,frē·kwən·sē }

field intensity [COMMUN] In Federal Communications Commission regulations, the electric field intensity in the horizontal direction. { 'fēld in ,ten·səd·ē }

field ionization [ELECTR] The ionization of gaseous atoms and molecules by an intense electric field, often at the surface of a solid. { 'fēld ,ī·ən·ə'zā·shən }

field-ion microscope [ELECTR] A microscope in which atoms are ionized by an electric field near a sharp tip; the field then forces the ions to a fluorescent screen, which shows an enlarged image of the tip, and individual atoms are made visible; this is the most powerful microscope yet produced. Also known as ion microscope. { ¦fēld ¦ī,än 'mī·krə,skōp }

field length [COMPUT SCI] The number of columns, characters, or bits in a specified field. { 'fēld ,leŋkth }

field of search [ELECTR] The space that a radar set or installation can cover effectively. { 'fēld əv 'sərch }

field of view [ELECTR] The space in which a radar can operate effectively. { 'fēld əv 'vyü }

field pattern *See* radiation pattern. { 'fēld ˌpad·ərn }

field-programmable gate array [ELECTR] A gate-array device that can be configured and reconfigured by the system manufacturer and sometimes by the end user of the system. { ¦fēld prōˌgram·ə·bəl 'gāt əˌrā }

field-programmable logic array [ELECTR] A programmed logic array in which the internal connections of the logic gates can be programmed once in the field by passing high current through fusible links, by using avalanche-induced migration to short base-emitter junctions at desired interconnections, or by other means. Abbreviated FPLA. Also known as programmable logic array. { 'fēld prō¦gram·ə·bəl 'läj·ik əˈrā }

field repetition rate *See* field frequency. { ¦fēld rep·ə'tish·ən ˌrāt }

field rheostat [ELEC] A rheostat used to adjust the current in the field winding of an electric machine. { 'fēld ¦rē·əˌstat }

field scan [ELECTR] Television term denoting the vertical excursion of an electron beam downward across a cathode-ray tube face, the excursion being made in order to scan alternate lines. { 'fēld ˌskan }

field section [COMPUT SCI] A portion of a field, such as the section formed by the second and third character of a 10-character field. { 'fēld ˌsek·shən }

field separator [COMPUT SCI] A character that is used to mark the boundary between fields in a record. { 'fēld ˌsep·əˌrād·ər }

field-sequential color television [COMMUN] An analog color television system in which the individual red, green, and blue primary colors are associated with successive fields. { ¦fēld sə ¦kwen·chəl ¦kəl·ər 'tel·əˌvizh·ən }

field service representative *See* field engineer. { 'fēld ˌsər·vəs ˌrep·rəˌzent·əd·iv }

field squeeze [COMPUT SCI] In a mail merge operation, the elimination of extra blank spaces in a data field so that the data field is correctly printed within the text of the letter. { 'fēld ˌskwēz }

field-strength meter [ENG] A calibrated radio receiver used to measure the field strength of radiated electromagnetic energy from a radio transmitter. { 'fēld ˌstreŋkth ˌmēd·ər }

field telephone [COMMUN] A portable telephone designed for field or combat use. { 'fēld ˌtel·əˌfōn }

field waveguide [ELECTROMAG] A single wire, threaded or coated with dielectric, which guides an electromagnetic field. Also known as G string. { 'fēld 'wāvˌgīd }

field wire [ELEC] An insulated flexible wire or cable used in field telephone and telegraph systems. { 'fēld ˌwīr }

fifth-generation computer [COMPUT SCI] A computer that would use artificial intelligence techniques to learn, reason, and converse in natural languages resembling human languages. { 'fifth ˌjen·əˌrā·shən kəm'pyüd·ər }

figurative constant [COMPUT SCI] A predefined constant in COBOL which does not require a description in data division, such as ZERO which stands for 0. { 'fig·yə·rəd·iv 'kän·stənt }

figure of merit [ELECTR] A performance rating that governs the choice of a device for a particular application; for example, the figure of merit of a magnetic amplifier is the ratio of usable power gain to the control time constant. { 'fig·yər əv 'mer·ət }

filament [ELEC] Metallic wire or ribbon which is heated in an incandescent lamp to produce light, by passing an electric current through the filament. [ELECTR] A cathode made of resistance wire or ribbon, through which an electric current is sent to produce the high temperature required for emission of electrons in a thermionic tube. Also known as directly heated cathode; filamentary cathode; filament-type cathode. { 'fil·ə·mənt }

filamentary cathode *See* filament. { ˌfil·ə'ment·ə·rē }

filament current [ELECTR] The current supplied to the filament of an electron tube for heating purposes. { 'fil·ə·mənt ˌkə·rənt }

filament emission [ELECTR] Liberation of electrons from a heated filament wire in an electron tube. { 'fil·ə·mənt i'mish·ən }

filament lamp *See* incandescent lamp. { 'fil·ə·mənt ˌlamp }

filament saturation *See* temperature saturation. { 'fil·ə·mənt ˌsach·əˈrā·shən }

filament transformer [ELECTR] A small transformer used exclusively to supply filament or heater current for one or more electron tubes. { 'fil·ə·mənt tranzˌfȯr·mər }

filament-type cathode *See* filament. { 'fil·ə·mənt ˌtīp 'kath,ōd }

filament winding [ELECTR] The secondary winding of a power transformer that furnishes alternating-current heater or filament voltage for one or more electron tubes. { 'fil·ə·mənt ˌwīnd·iŋ }

file [COMPUT SCI] A collection of related records treated as a unit. { fīl }

file allocation table [COMPUT SCI] A table stored on hard or removable disks used to locate files or sections of files if scattered about the disk. Abbreviated FAT. { ˌfīl ˌal·əˈkā·shən ˌtā·bəl }

file compression program *See* file compression utility. { 'fīl kəmˌpresh·ən ˌprō·grəm }

file compression utility [COMPUT SCI] A utility program that encodes files so that they take up less space in storage. Also known as file compression program. { 'fīl kəmˌpresh·ən yü ˌtil·əd·ē }

file control system [COMPUT SCI] Software package which handles the transfer of data from any device into any device. { 'fīl kənˌtrōl ˌsis·təm }

file event [COMPUT SCI] A single access to any storage device for either input or output. { 'fīl i ˌvent }

file format [COMPUT SCI] The rules that determine the organization of data in a file. { 'fīl ˌfȯr·mat }

file gap [COMPUT SCI] An area in a data storage medium which is used mainly to indicate the end of a file and sometimes the beginning of another. { 'fīl ˌgap }

file-handling routine [COMPUT SCI] A part of a computer program that deals with reading and writing of data from and to a file. { 'fīl ˌhand·liŋ rüˌtēn }

file header [COMPUT SCI] A set of words comprising the file name and various characteristics of the file, found at the beginning of a file stored on magnetic tape or disk. { 'fīl ˌhed·ər }

file identification [COMPUT SCI] A device, such as a label or tag, used to identify, describe, or name a physical medium, such as a disk or reel of magnetic tape, which contains data. { ¦fīl īˌdent·ə·fə'kā·shən }

file layout [COMPUT SCI] A description of the arrangement of the data in a file. { 'fīl ˌlāˌaůt }

file locking [COMPUT SCI] A technique that prevents processing of a file by more than one program or user at a time, ensuring that a file in use by one user is made unavailable to others. { 'fil ˌläk·iŋ }

file maintenance [COMPUT SCI] Data-processing operation in which a master file is updated on the basis of one or more transaction files. { 'fīl ˌmānt·ən·əns }

file management system [COMPUT SCI] Computer programs that control the space used for file storage and provide such services as input/output control and indexing. { 'fīl ¦man·ij·mənt ˌsis·təm }

file manager [COMPUT SCI] Software for managing data that works only with single files and lacks relational capability. { 'fīl ˌman·ə·jər }

file name [COMPUT SCI] The name given by the programmer to a specific set of data. { 'fīl ˌnām }

file opening [COMPUT SCI] The process, carried out by computer software, of identifying a file and comparing the file header with specifications in the program being run to ensure that the file corresponds. { 'fīl ˌōp·ə·niŋ }

file organization [COMPUT SCI] The structure of a file meeting two requirements: to minimize the running time of the program, and to simplify the work involved in modifying the contents of the file. { ¦fīl ˌȯrg·ə·nə'zā·shən }

file organization routine [COMPUT SCI] A program which allocates data files into random-access storage devices. { ¦fīl ˌȯrg·ə·nə'zā·shən rüˌtēn }

file-oriented system [COMPUT SCI] A computer configuration which considers a heavy, or exclusive, usage of data files. { 'fīl ˌȯr·ēˌent·əd ˌsis·təm }

file printout [COMPUT SCI] Output from a computer printer consisting of a copy of the contents of a file held in some storage device, usually to assist in debugging a program. { 'fīl ˌprinˌtaůt }

file processing [COMPUT SCI] The job of updating, sorting, or validating a data file. { 'fīl ˌpräs ˌes·iŋ }

file protection [COMPUT SCI] A mechanical device or a computer command which prevents erasing of or writing upon a magnetic tape but allows a program to read the data from the tape. { 'fīl prəˌtek·shən }

file protection ring [COMPUT SCI] A ring that can be attached to, or detached from, the hub of a reel of magnetic tape, used to identify the reel's status and, in some computer systems, to prevent writing upon the tape when the ring is attached or detached. { 'fīl prəˌtek·shən ˌriŋ }

file reference [COMPUT SCI] An operation involving looking up and retrieving the information on file for a specified item or items. { 'fīl ˌref·rəns }

file reorganization [COMPUT SCI] An activity performed periodically on files and data bases, involving such operations as deletion of unneeded records, in order to minimize space requirements of files and improve efficiency of processing. { 'fīl rēˌōr·gə·nə'zā·shən }

file search [COMPUT SCI] An operation involving looking through the file for information on all items falling in a specified category, extracting the information for any item where the information recorded meets certain criteria, and determining whether or not there exists a specified pattern of information anywhere in the file. { 'fīl ˌsərch }

file security *See* data security. { 'fīl səˌkyür·əd·ē }

file server [COMPUT SCI] A mass storage device that holds programs and data that can be accessed and shared by the workstations connected to a local-area network. Also known as network server. { 'fīl ˌsər·vər }

file sharing [COMPUT SCI] The common use, by two or more users, of data and program files, usually located in a file server. { 'fīl ˌsher·iŋ }

FileSize metric [COMPUT SCI] A measure of computer program size, equal to the total number of characters in the source file of the program. { ¦fīl'sīz ¦me·trik }

file specification [COMPUT SCI] A designation that enables a file to be located on a disk and includes the disk drive, name of the directory/subdirectory, and name of file. { 'fīl ˌspes·ə·fəˌkā·shən }

file storage unit [COMPUT SCI] The component of a computer system that stores information required for reference. { 'fīl ˌstȯr·ij ˌyü·nət }

file transfer [COMPUT SCI] The movement, under program control, of a file from one storage device to another. { 'fīl ˌtranz·fər }

file transfer access and management [COMPUT SCI] A standard communications protocol for transferring files between systems of different vendors. Abbreviated FTAM. { ¦fīl ¦tranz·fər ¦ak ˌses ən 'man·ij·mənt }

file transfer protocol [COMPUT SCI] A set of standards that allows the user of any computer on the Internet to receive files from another computer, or to transmit files to another computer, after the user has specified a name and password for the other computer. Abbreviated FTP. { 'fīl ¦tranz·fər ˌprōd·ə·kȯl }

file transfer utility [COMPUT SCI] A computer program specifically designed to handle file transfers. { 'fīl ¦tranz·fər yü,til·əd·ē }

file virus [COMPUT SCI] A computer virus that infects application files such as spreadsheets, computer games, or accounting software. { 'fīl ,vī·rəs }

fill characters [COMPUT SCI] Nondata characters or bits which are used to fill out a field on the left if data are right-justified or on the right if data are left-justified. { 'fil ,kar·ik·tərz }

filler [COMPUT SCI] Storage space that does not contain significant data but is needed to comply with length requirements or is reserved to fulfill some future need. { 'fil·ər }

film [ELEC] The layer adjacent to the valve metal in an electrochemical valve, in which is located the high voltage drop when current flows in the direction of high impedance. { film }

film integrated circuit [ELECTR] An integrated circuit whose elements are films formed in place on an insulating substrate. { ¦film int·ə¦grād·əd 'sər·kət }

film optical-sensing device [COMPUT SCI] A device capable of digitizing the information stored on a film. { 'film ¦äp·tə·kəl ¦sens·iŋ di,vīs }

film reader [ELECTR] A device for converting a pattern of transparent or opaque spots on a photographic film into a series of electric pulses. [OPTICS] A device for projecting or displaying microfilm so that an operator can read the data on the film; usually provided with equipment for moving or holding the film. { 'film ,rēd·ər }

film recorder [ELECTR] A device which places data, usually in the form of transparent and opaque spots or light and dark spots, on photographic film. { 'film ri,kȯrd·ər }

film resistor [ELEC] A fixed resistor in which the resistance element is a thin layer of conductive material on an insulated form; the conductive material does not contain binders or insulating material. { 'film ri,zis·tər }

film scanning [ELECTR] The process of converting motion picture film into corresponding electric signals that can be transmitted by a video system. { 'film ,skan·iŋ }

filter [COMPUT SCI] A device or program that separates data or signals in accordance with specified criteria. [CONT SYS] *See* compensator. [ELECTR] Any transmission network used in electrical systems for the selective enhancement of a given class of input signals. Also known as electric filter; electric-wave filter. [ENG ACOUS] A device employed to reject sound in a particular range of frequencies while passing sound in another range of frequencies. Also known as acoustic filter. [OPTICS] An optical element that partially absorbs incident electromagnetic radiation in the visible, ultraviolet, or infrared spectra, consisting of a pane of glass or other partially transparent material, or of films separated by narrow layers; the absorption may be either selective or nonselective with respect to wavelength. Also known as optical filter. { 'fil·tər }

filter capacitor [ELEC] A capacitor used in a power-supply filter system to provide a low-reactance path for alternating currents and thereby suppress ripple currents, without affecting direct currents. { 'fil·tər kə,pas·əd·ər }

filter choke [ELEC] An iron-core coil used in a power-supply filter system to pass direct current while offering high impedance to pulsating or alternating current. { 'fil·tər ,chōk }

filter crystal [ELECTR] Quartz crystal which is used in an electrical circuit designed to pass energy of certain frequencies. { 'fil·tər ,krist·əl }

filter design [ELECTR] The design of electrical networks in which the principle of electrical resonance is used to make the network accept wanted frequencies while rejecting unwanted ones. { 'fil·tər di,zīn }

filter discrimination [ELECTR] Difference between the minimum insertion loss at any frequency in a filter attenuation band and the maximum insertion loss at any frequency in the operating range of a filter transmission band. { 'fil·tər di,skrim·ə'nā·shən }

filtered radar data [ELECTR] Radar data from which unwanted returns have been removed by mapping. { ¦fil·tərd 'rā,där ,dad·ə }

filter impedance compensator [ELECTR] Impedance compensator which is connected across the common terminals of electric wave filters when the latter are used in parallel to compensate for the effects of the filters on each other. { ¦fil·tər im'ped·əns ,käm·pən'sād·ər }

filter pass band *See* filter transmission band. { ¦fil·tər 'pas ,band }

filter reactor [ELEC] A reactor used for reducing the harmonic components of voltage in an alternating-current or direct-current circuit. { 'fil·tər rē,ak·tər }

filter section [ELEC] A simple RC, RL, or LC network used as a broad-band filter in a power supply, grid-bias feed, or similar device. { 'fil·tər ,sek·shən }

filter slot [ELECTROMAG] Choke in the form of a slot designed to suppress unwanted modes in a waveguide. { 'fil·tər ,slät }

filter transmission band [ELECTR] Frequency band of free transmission; that is, frequency band in which, if dissipation is neglected, the attenuation constant is zero. Also known as filter pass band. { ¦fil·tər tranz'mish·ən ,band }

final amplifier [ELECTR] The transmitter stage that feeds the antenna. { ¦fīn·əl 'am·plə,fī·ər }

financial planning system [COMPUT SCI] A decision-support system that allows the financial planner or manager to examine and evaluate many alternatives before making final decisions, and which employs the use of a model, usually a matrix of data elements which is constructed as a series of equations. { fī ¦nan·chəl 'plan·iŋ ,sis·təm }

finder [COMMUN] Switch or relay group in telephone switching systems that selects the path which the call is to take through the system; operates under the instruction of the calling station's dial. { 'fīnd·ər }

finder beam [COMPUT SCI] A beam of light projected by a light pen on the spot on the display

screen where the light pen photodetector is focused, in order to aid the user in positioning the light pen. { 'fīnd·ər ˌbēm }

F-indicator *See* F-display. { 'ef ˌin·dəˌkād·ər }

finding circuit *See* lockout circuit. { 'fīnd·iŋ ˌsər·kət }

fine index [COMPUT SCI] The more specific of two indices consulted to gain access to a record. { ¦fīn 'inˌdeks }

finger gripper [CONT SYS] A robot component that uses two or more joints for grasping objects. { 'fiŋ·gər ˌgrip·ər }

finite clipping [ELECTR] Clipping in which the threshold level is large but is below the peak input signal amplitude. { ¦fīˌnīt 'klip·iŋ }

finite difference [MATH] The difference between the values of a function at two discrete points, used to approximate the derivative of the function. { ¦fīˌnīt 'dif·rəns }

finite-difference equations [MATH] Equations arising from differential equations by substituting difference quotients for derivatives, and then using these equations to approximate a solution. { ¦fīˌnīt ¦dif·rəns iˌkwā·zhənz }

finite element method [ENG] A numerical analysis technique for obtaining approximate descriptions of continuous physical systems, used in structural mechanics, electrical field theory, and fluid mechanics; the system is broken into discrete elements interconnected at discrete node points, and the values of various physical quantities for the elements or node points are calculated numerically. { ¦fīˌnīt 'el·ə·mənt ˌmeth·əd }

finite impulse response filter [ELECTR] An electric filter that will settle to a steady state within a finite amount of time after being exposed to a change in input. Abbreviated FIR filter. { ¦fīˌnīt ˌimˌpəls ri'späns ˌfil·tər }

finite precision number [COMPUT SCI] A number that can be represented by a finite set of symbols in a given numeration system. { ¦fīˌnīt prə ¦sizh·ən 'nəm·bər }

finite-state machine [COMPUT SCI] An automaton that has a finite number of distinguishable internal configurations. { 'fīˌnīt ˌstāt məˌshēn }

Finsen lamp [ELEC] A high-temperature carbon arc or mercury arc lamp that produces a mixture of blue, violet, and near-ultraviolet light; used to treat certain skin disorders and to test paints and other protective coatings. { 'fin·sən ˌlamp }

fin waveguide [ELECTROMAG] Waveguide containing a thin longitudinal metal fin that serves to increase the wavelength range over which the waveguide will transmit signals efficiently; usually used with circular waveguides. { ¦fin 'wāvˌgīd }

fire-control circuit [ELECTR] An electric circuit in a fire-control system. { 'fīr kənˌtrōl ˌsər·kət }

fired state [ELECTR] The "on" state of a silicon controlled rectifier or other semiconductor switching device, occurring when a suitable triggering pulse is applied to the gate. { ¦fīrd 'stāt }

firewall [COMPUT SCI] Hardware and software programs that protect the resources of a private network from users in other networks, controlling all traffic according to a predefined access policy. { 'fīˌwȯl }

firewire *See* IEEE 1394. { 'fīrˌwīr }

FIR filter *See* finite impulse response filter. { 'fər *or* ¦efˌī'ər ˌfil·ter }

firing [ELECTR] **1.** The gas ionization that initiates current flow in a gas-discharge tube. **2.** Excitation of a magnetron or transmit-receive tube by a pulse. **3.** The transition from the unsaturated to the saturated state of a saturable reactor. { 'fīr·iŋ }

firing box [ELEC] A boxlike item in which are mounted switches, cables, fuses, plugs, indicator lights, batteries, and the like, specifically designed for firing a rocket or guided missile from a remote position. { 'fīr·iŋ ˌbäks }

firing button [ELEC] A button or switch for firing guns or rockets. { 'fīr·iŋ ˌbət·ən }

firing cable *See* shot-firing cable. { 'fīr·iŋ ˌkā·bəl }

firing circuit [ELECTR] **1.** Circuit used with an ignitron to deliver a pulse of current of 5–50 amperes in the forward direction, from the igniter to the mercury, to start a cathode spot and to control the time of firing. **2.** By analogy, a similar control circuit of silicon-controlled rectifiers and like devices. { 'fīr·iŋ ˌsər·kət }

firing point *See* critical grid voltage. { 'fīr·iŋ ˌpȯint }

firing potential [ELECTR] Controlled potential at which conduction through a gas-filled tube begins. { 'fīr·iŋ pəˌten·chəl }

firmware [COMPUT SCI] A computer program or instruction, such as a microprogram, used so often that it is stored in a read-only memory instead of being included in software; often used in computers that monitor production processes. { 'fərmˌwer }

first detector *See* mixer. { ¦fərst di'tek·tər }

first Fresnel zone [ELECTROMAG] Circular portion of a wavefront transverse to the line between an emitter and a more distant point, where the resultant disturbance is being observed, whose center is the intersection of the front with the direct ray, and whose radius is such that the shortest path from the emitter through the periphery to the receiving point is one-half wavelength longer than the direct ray. { ¦fərst frə'nelˌzōn }

first-generation [COMPUT SCI] Denoting electronic hardware, logical organization, and software characteristic of a first-generation computer. { ¦fərst jen·ə'rā·shən }

first-generation computer [COMPUT SCI] A computer from the earliest stage of computer development, ending in the early 1960s, characterized by the use of vacuum tubes, the performance of one operation at a time in strictly sequential fashion, and elementary software, usually including a program loader, simple utility routines, and an assembler to assist in program writing. { ¦fərst jen·ə¦rā·shən kəm'pyüd·ər }

first-item list [COMPUT SCI] A series of records that is printed with descriptive information from only the first record of each group. { ¦fərst 'ī·dəm ˌlist }

first-level address [COMPUT SCI] The location of a referenced operand. { ¦fərst ¦lev·əl ə'dres }

first-level controller [CONT SYS] A controller that is associated with one of the subsystems into which a large-scale control system is partitioned by plant decomposition, and acts to satisfy local objectives and constraints. Also known as local controller. { ¦fərst ¦lev·əl kən'trōl·ər }

first-level interrupt handler [COMPUT SCI] A software or hardware routine that is activated by interrupt signals sent by peripheral devices and decides, based on the relative importance of the interrupts, how they should be handled. Abbreviated FLIH. { 'fərst ¦lev·əl 'int·əˌrəpt ˌhand·lər }

first-level packaging [ELECTR] Electronic packaging which provides interconnection directly to the integrated circuit chip. { ˌfərst ˌlev·əl 'pak·ij·iŋ }

first-order subroutine [COMPUT SCI] A subroutine which is entered directly from a main routine or program and which leads back to that program. Also known as first-remove subroutine. { ¦fərst ˌȯrd·ər 'səb·rüˌtēn }

first-remove subroutine *See* first-order subroutine. { 'fərst 'rəˌmüv 'səb·rüˌtēn }

first selector [ELECTR] Selector which immediately follows a line finder in a switch train and which responds to dial pulses of the first digit of the called telephone number. { 'fərst si'lek·tər }

Fischer-Hinnen method [ELEC] Method of analysis of a complex waveform which has like loops above and below the time axis, in which the amplitude and phase of the n-th harmonic is determined from the ordinates of the resultant wave at a series of times which divide the half wave into $2n$ equal time intervals. { ¦fish·ər ¦hin·ən ˌmeth·əd }

fish-bone antenna [ELECTROMAG] **1.** Antenna consisting of a series of coplanar elements arranged in collinear pairs, loosely coupled to a balanced transmission line. **2.** Directional antenna in the form of a plane array of doublets arranged transversely along both sides of a transmission line. { 'fish ˌbōn anˌten·ə }

fishpole antenna *See* whip antenna. { 'fishˌpōl anˌten·ə }

five-level code [COMPUT SCI] A code which uses five bits to specify each character. { 'fīv ˌlev·əl 'kōd }

five-wire line [ELEC] A transmission line which has four conductors, all in phase, at the corners of a square and a fifth conductor at the center of the square which is out of phase with the others. { 'fīv ˌwīr 'līn }

fix [COMPUT SCI] A piece of coding that is inserted in a computer program to correct an error. { fiks }

fixed-active tooling [CONT SYS] Stationary equipment in a robotic system, such as numerical control equipment, sensors, cameras, conveying systems and parts feeders, that is activated and controlled by signals. { 'fikst ¦ak·tiv 'tül·iŋ }

fixed area [COMPUT SCI] That portion of the main storage occupied by the resident portion of the control program. { ¦fikst 'er·ē·ə }

fixed attenuator *See* pad. { ¦fikst ə'ten·yəˌwād·ər }

fixed bias [ELECTR] A constant value of bias voltage, independent of signal strength. { ¦fikst 'bī·əs }

fixed-bias transistor circuit [ELECTR] A transistor circuit in which a current flowing through a resistor is independent of the quiescent collector current. { ¦fikst ¦bī·əs tran'zis·tər ˌsər·kət }

fixed-block [COMPUT SCI] Pertaining to an arrangement of data in which all the blocks of data have the same number of words or characters, as determined by either the hardware requirements of the computer or the programmer. { ¦fikst 'bläk }

fixed capacitor [ELEC] A capacitor having a definite capacitance value that cannot be adjusted. { ¦fikst kə'pas·əd·ər }

fixed contact [ELEC] A relatively immovable contact that is engaged and disengaged by a moving contact to make and break a circuit, as in a switch or relay. { ¦fikst 'känˌtakt }

fixed-cycle operation [COMPUT SCI] An operation completed in a specified number of regularly timed execution cycles. { ¦fikst 'sī·kəl ˌäp·ə'rā·shən }

fixed disk [COMPUT SCI] A disk drive that permanently holds the disk platters. { ¦fikst 'disk }

fixed echo [ELECTR] A persistent echo indication that remains stationary on the radar display, indicating the presence of a fixed target. Also known as permanent echo. { ¦fikst 'ek·ō }

fixed-field method [COMPUT SCI] A method of data storage in which the same type of data is always placed in the same relative position. { 'fikst ˌfēld 'meth·əd }

fixed form coding [COMPUT SCI] Any method of coding a source language in which each part of the instruction appears in a fixed field. { 'fikst ˌfōrm 'kōd·iŋ }

fixed-head disk [COMPUT SCI] A disk storage device in which the read-write heads are fixed in position, one to a track, and the arms to which they are attached are immovable. { 'fikst ˌhed 'disk }

fixed inductor [ELEC] An inductor whose coils are wound in such a manner that the turns remain fixed in position with respect to each other, and which either has no magnetic core or has a core whose air gap and position within the coil are fixed. { ¦fikst in'dək·tər }

fixed-length field [COMPUT SCI] A field that always has the same number of characters, regardless of its content. { ¦fikst ˌleŋkth 'fēld }

fixed-length operation [COMPUT SCI] A computer operation whose operands always have the same number of bits or characters. { ¦fikst ˌleŋkth ˌäp·ə'rā·shən }

fixed-length record [COMPUT SCI] One of a file of records, each of which must have the same specified number of data units, such as blocks, words, characters, or digits. { ¦fikst ˌleŋkth 'rek·ərd }

fixed logic [COMPUT SCI] Circuit logic of computers or peripheral devices that cannot be changed by external controls; connections must be physically broken to arrange the logic. { ¦fikst 'läj·ik }

fixed medium [COMPUT SCI] A data storage device in which the reading and writing of data do not involve mechanical motion. { 'fikst 'mē·dē·əm }

fixed memory [COMPUT SCI] Of a computer, a nondestructive readout memory that is only mechanically alterable. { ¦fikst 'mem·rē }

fixed-passive tooling [CONT SYS] Unpowered, accessory equipment in a robotic system, such as jigs, fixtures, and work-holding devices. { 'fikst ¦pas·iv 'tül·iŋ }

fixed-point arithmetic [COMPUT SCI] **1.** A method of calculation in which the computer does not consider the location of the decimal or radix point because the point is given a fixed position. **2.** A type of arithmetic in which the operands and results of all arithmetic operations must be properly scaled so as to have a magnitude between certain fixed values. { ¦fikst ˌpȯint ə'rith·mə·tik }

fixed-point calculation [COMPUT SCI] A calculation made with fixed-point arithmetic. { ¦fikst ˌpȯint ˌkal·kyə'lā·shən }

fixed-point computer [COMPUT SCI] A computer in which numbers in all registers and storage locations must have an arithmetic point which remains in the same fixed location. { ¦fikst ˌpȯint kəm'pyüd·ər }

fixed-point part *See* mantissa. { ¦fikst ˌpȯint 'pärt }

fixed-point representation [COMPUT SCI] Any method of representing a number in which a fixed-point convention is used. { ¦fikst ˌpȯint ˌrep·rə·zen'tā·shən }

fixed-point system [COMPUT SCI] A number system in which the location of the point is fixed with respect to one end of the numerals, according to some convention. { ¦fikst ˌpȯint 'sis·təm }

fixed-position addressing [COMPUT SCI] Direct access to an item in a data file on disk or drum, as opposed to a sequential search for this item starting with the first item in the file. { ¦fikst pə ˌzish·ən ə'dres·iŋ }

fixed-product area [COMPUT SCI] The area in core memory where multiplication takes place for certain types of computers. { ¦fikst ˌpräd·əkt 'er·ē·ə }

fixed-program computer [COMPUT SCI] A special-purpose computer having a program permanently wired in. { ¦fikst ˌprō·grəm kəm'pyüd·ər }

fixed resistor [ELEC] A resistor that has no provision for varying its resistance value. { ¦fikst ri'zis·tər }

fixed-satellite service [COMMUN] A radiocommunication service between earth stations at given positions that uses one or more satellites. Abbreviated FSS. { ¦fikst 'sad·əl,īt ˌsər·vis }

fixed-sequence robot *See* fixed-stop robot. { 'fikst ¦sē·kwəns 'rō,bät }

fixed service [COMMUN] Service providing radio communications between fixed points. { ¦fikst 'sər·vəs }

fixed-stop robot [CONT SYS] A robot in which the motion along each axis has a fixed limit, but the motion between these limits is not controlled and the robot cannot stop except at these limits. Also known as fixed-sequence robot; limited-sequence robot; nonservo robot. { 'fikst ¦stäp 'rō,bät }

fixed storage [COMPUT SCI] A storage for data not alterable by computer instructions, such as magnetic-core storage with a lockout feature. { ¦fikst 'stȯr·ij }

fixed transmitter [ELECTR] Transmitter that is operated in a fixed or permanent location. { ¦fikst 'tranz'mid·ər }

fixed word length [COMPUT SCI] The length of a computer machine word that always contains the same number of characters or digits. { ¦fikst 'wərd ˌleŋkth }

flag [COMPUT SCI] Any of various types of indicators used for identification, such as a work mark, or a character that signals the occurrence of some condition, such as the end of a word. { flag }

flag flip-flop [COMPUT SCI] A one-bit register which indicates overflow, carry, or sign bit from past or current operations. { 'flag 'flip ˌfläp }

flag operand [COMPUT SCI] A part of the instruction of some assembly languages denoting which elements of the object instruction will be flagged. { 'flag 'äp·ə,rand }

flame arc lamp [ELEC] An arc lamp in which carbon electrodes are impregnated with chemicals, such as calcium, barium, or titanium, which are more volatile than the carbon and radiate light when driven into the arc. { ¦flām 'ärk ˌlamp }

flame spraying [ENG] Deposition of a conductor on a board in molten form, generally through a metal mask or stencil, by means of a spray gun that feeds wire into a gas flame and drives the molten particles against the work. { 'flām ˌsprā·iŋ }

flange isolator *See* short waveguide isolator. { ¦flanj 'ī·sə,lād·ər }

flap attenuator [ELECTROMAG] A waveguide attenuator in which a contoured sheet of dissipative material is moved into the guide through a nonradiating slot to provide a desired amount of power absorption. Also known as vane attenuator. { ¦flap ə'ten·yə,wād·ər }

flare [ELECTR] A radar screen target indication having an enlarged and distorted shape due to excessive brightness. [ELECTROMAG] *See* horn antenna. { fler }

flare factor [ENG ACOUS] Number expressing the degree of outward curvature of the horn of a loudspeaker. { 'fler ˌfak·tər }

flash arc [ELECTR] A sudden increase in the emission of large thermionic vacuum tubes, probably due to irregularities in the cathode surface. { 'flash ˌärk }

flashback voltage [ELECTR] Inverse peak voltage at which ionization takes place in a gas tube. { 'flash,bak ˌvōl·tij }

flash barrier [ELEC] A fireproof structure between conductors of an electric machine,

designed to minimize flashover or the damage caused by flashover. { 'flash ,bar·ē·ər }

flasher [ELEC] A switch, generally either motor-driven or using a combination heater element and bimetallic strip, that turns lamps on and off rapidly. { 'flash·ər }

flashing over [ELEC] Accidental formation of an arc over the surface of a rotating commutator from brush-to-brush; usually caused by faulty insulation between commutator segments. { ¦flash·iŋ 'ō·vər }

flash lamp [ELECTR] A gaseous-discharge lamp used in a photoflash unit to produce flashes of light of short duration and high intensity for stroboscopic photography. Also known as stroboscopic lamp. { 'flash ,lamp }

flash memory [COMPUT SCI] A type of electrically erasable programmable read-only memory (EEPROM). While EPROM is reprogrammed bit-by-bit, flash memory is reprogrammed in blocks, making it faster. It is nonvolatile. { ¦flash 'mem·rē }

flashover [ELEC] An electric discharge around or over the surface of an insulator. { 'flash,ō·vər }

flashover voltage [ELECTR] The voltage at which an electric discharge occurs between two electrodes that are separated by an insulator; the value depends on whether the insulator surface is dry or wet. Also known as sparkover voltage. { 'flash,ō·vər ,vōl·tij }

flash test [ELEC] A method of testing insulation by applying momentarily a voltage much higher than the rated working voltage. { 'flash ,test }

flatbed plotter [ENG] A graphics output device that draws by moving a pen in both horizontal and vertical directions over a sheet of paper; the overall size of the drawing is limited by the height and width of this bed. { 'flat,bed 'pläd·ər }

flat cable [ELEC] A cable made of round or rectangular, parallel copper wires arranged in a plane and laminated or molded into a ribbon of flexible insulating plastic. { ¦flat 'kā·bəl }

flat-conductor cable [ELEC] A cable made of wide, flat conductors arranged side by side in a plane and protected by ribbons of insulating plastic. { 'flat kən,dək·tər 'kā·bəl }

flat fading [COMMUN] Type of fading in which all components of the received radio signal fluctuate in the same proportion simultaneously. { ¦flat 'fād·iŋ }

flat file [COMPUT SCI] A two-dimensional array. { 'flat ,fīl }

flat line [ELECTROMAG] A radio-frequency transmission line, or part thereof, having essentially 1-to-1 standing wave ratio. { 'flat ,līn }

flatpack [ELECTR] Semiconductor network encapsulated in a thin, rectangular package, with the necessary connecting leads projecting from the edges of the unit. { 'flat,pak }

flat-panel display See panel display. { 'flat ¦pan·əl di'splā }

flat-top antenna [ELECTROMAG] An antenna having two or more lengths of wire parallel to each other and in a plane parallel to the ground, each fed at or near its midpoint. { 'flat ,täp an,ten·ə }

flat-top response See band-pass response. { 'flat ¦täp ri'späns }

flat tuning [ELECTR] Tuning of a radio receiver in which a change in frequency of the received waves produces only a small change in the current in the tuning apparatus. { ¦flat 'tün·iŋ }

Fleming tube [ELECTR] The original diode, consisting of a heated filament and a cold metallic electrode in an evacuated glass envelope; negative current flows from the filament to the cold electrode, but not in the reverse direction. { 'flem·iŋ ,tüb }

flexible circuit [ELECTR] A printed circuit made on a flexible plastic sheet that is usually die-cut to fit between large components. { ,flek·sə·bəl 'sər·kət }

flexible resistor [ELEC] A wire-wound resistor having the appearance of a flexible lead; made by winding the Nichrome resistance wire around a length of asbestos or other heat-resistant cord, then covering the winding with asbestos and braided insulating covering. { ,flek·sə·bəl ri'zis·tər }

flexible waveguide [ELECTROMAG] A waveguide that can be bent or twisted without appreciably changing its electrical properties. { ,flek·sə·bəl 'wāv,gīd }

flexional symbols [COMPUT SCI] Symbols in which the meaning of each component digit is dependent on those which precede it. { ¦flek·shən·əl ¦sim·bəlz }

flexowriter [COMPUT SCI] A typewriterlike device to read in manually or to read out information of a computer to which it is connected; it can also be used to punch paper tape. { 'flek·sə,wrīd·ər }

flicker effect [ELECTR] Random variations in the output current of an electron tube having an oxide-coated cathode, due to random changes in cathode emission. { 'flik·ər i,fekt }

flight-path computer [COMPUT SCI] A computer that includes all of the functions of a course-line computer and also provides means for controlling the altitude of an aircraft in accordance with a desired plan of flight. { 'flīt ,path kəm'pyüd·ər }

FLIH See first-level interrupt handler.

flip chip [ELECTR] A tiny semiconductor die having terminations all on one side in the form of solder pads or bump contacts; after the surface of the chip has been passivated or otherwise treated, it is flipped over for attaching to a matching substrate. Also known as solder-ball flip chip. { 'flip ,chip }

flip-flop circuit See bistable multivibrator. { 'flip ,fläp ,sər·kət }

flip-open cutout fuse See dropout fuse. { ¦flip ¦ō·pən 'kəd,aůt ,fyüz }

floating [ELECTR] The condition wherein a device or circuit is not grounded and not tied to an established voltage supply. { 'flōd·iŋ }

floating address [COMPUT SCI] The symbolic address used prior to its conversion to a machine address. { ¦flōd·iŋ ə'dres }

floating battery [ELEC] A storage battery connected permanently in parallel with another power source; the battery normally handles only

small charging or discharging currents, but takes over the entire load upon failure of the main supply. { ¦flōd·iŋ 'bad·ə·rē }

floating carrier modulation *See* controlled carrier modulation. { ¦flōd·iŋ ˌkar·ē·ər ˌmäj·ə'lā·shən }

floating charge [ELEC] Application of a constant voltage to a storage battery, sufficient to maintain an approximately constant state of charge while the battery is idle or on light duty. { ¦flōd·iŋ 'chärj }

floating control [ENG] Control device in which the speed of correction of the control element is proportional to the error signal. Also known as proportional-speed control. { ¦flōd·iŋ kən'trōl }

floating dollar sign [COMPUT SCI] A dollar sign used with an edit mask, allowing the sign to be inserted before the nonzero leading digit of a dollar amount. { ¦flōd·iŋ 'däl·ər ˌsīn }

floating-gate avalanche-injection metal-oxide semiconductor device [ELECTR] An erasable programmable read-only memory chip that holds its contents until they are erased by ultraviolet light. Abbreviated FAMOS device. { ¦flōd·iŋ ¦gāt ¦av·əˌlanch in¦jek·shən ¦med·əl ¦āk ˌsīd ˌsem·i·kən'dək·tər diˌvīs }

floating graphic [COMPUT SCI] A picture or graph that moves up or down on a page of a document as text is deleted or inserted above it. { ˌflōd·iŋ 'graf·ik }

floating grid [ELECTR] Vacuum-tube grid that is not connected to any circuit; it assumes a negative potential with respect to the cathode. Also known as free grid. { ¦flōd·iŋ 'grid }

floating input [ELEC] Isolated input circuit not connected to ground at any point. { ¦flōd·iŋ 'in ˌpůt }

floating neutral [ELEC] Neutral conductor whose voltage to ground is free to vary when circuit conditions change. { ¦flōd·iŋ 'nü·trəl }

floating-point calculation [COMPUT SCI] A calculation made with floating-point arithmetic. { ¦flōd·iŋ ¦point ˌkal·kyə'lā·shən }

floating-point coefficient *See* mantissa. { ¦flōd·iŋ ¦point ˌkō·i'fish·ənt }

floating-point package [COMPUT SCI] A program which enables a computer to perform arithmetic operations when such capabilities are not wired into the computer. Also known as floating-point routine. { ¦flōd·iŋ ¦point 'pak·ij }

floating-point processor [COMPUT SCI] A separate processor or a special section of a computer's main storage that is for the efficient handling of floating-point operations. { 'flōd·iŋ ¦point 'präs ˌes·ər }

floating-point routine *See* floating-point package. { ¦flōd·iŋ ¦point rü'tēn }

floating-point system [COMPUT SCI] A number system in which the location of the point does not remain fixed with respect to one end of the numerals. { ¦flōd·iŋ ¦point 'sis·təm }

floating signal *See* differential signal. { 'flōd·iŋ 'sig·nəl }

flood [ELECTR] To direct a large-area flow of electrons toward a storage assembly in a charge storage tube. { fləd }

floodlight [ELEC] A light projector used for outdoor lighting of buildings, parking lots, sports fields, and the like, usually having a filament lamp or mercury-vapor lamp and a parabolic reflector. { 'fləd,līt }

floor outlet [ELEC] An electrical outlet whose face is level with or recessed into a floor. Also known as floor plug. { 'flōr ˌaůt·lət }

flopover [ELECTR] A defect in television reception in which a series of frames move vertically up or down the screen, caused by lack of synchronization between the vertical and horizontal sweep frequencies. { 'fläpˌō·vər }

floppy disk [COMPUT SCI] A flexible plastic disk coated with magnetic oxide and used for data storage and data entry to a computer; a slot in its protective envelope or housing, which remains stationary while the disk rotates, exposes the track positions for the magnetic read/write head of the drive unit. Also known as diskette. { ¦fläp·ē 'disk }

flops [COMPUT SCI] A unit of computer speed, equal to one floating-point arithmetic operation per second. { fläps }

flow [COMPUT SCI] The sequence in which events take place or operations are carried out. { flō }

flow chart [ENG] A graphical representation of the progress of a system for the definition, analysis, or solution of a data-processing or manufacturing problem in which symbols are used to represent operations, data or material flow, and equipment, and lines and arrows represent interrelationships among the components. Also known as control diagram; flow diagram; flow sheet. { 'flō ˌchärt }

flow-chart symbol [ENG] Any of the existing symbols normally used to represent operations, data or materials flow, or equipment in a data-processing problem or manufacturing-process description. { 'flō ˌchärt ˌsim·bəl }

flow diagram *See* flow chart. { 'flō ˌdī·əˌgram }

flow direction [ENG] The antecedent-to-successor relation, indicated by arrows or other conventions, between operations on a flow chart. { 'flō dəˌrek·shən }

flow graph [COMPUT SCI] A directed graph that represents a computer program, wherein a node in the graph corresponds to a block of sequential code and branches correspond to decisions taken in the program. [SYS ENG] *See* signal-flow graph. { 'flō ˌgraf }

flow line [ENG] The connecting line or arrow between symbols on a flow chart or block diagram. { 'flō ˌlīn }

flow sheet *See* flow chart. { 'flō ˌshēt }

flow soldering [ENG] Soldering of printed circuit boards by moving them over a flowing wave of molten solder in a solder bath; the process permits precise control of the depth of immersion in the molten solder and minimizes heating of the board. Also known as wave soldering. { 'flō ˌsäd·ə·riŋ }

fluctuating current [ELEC] Direct current that changes in value but not at a steady rate. { ¦fləkˌchəˌwād·iŋ 'kə·rənt }

fluctuation [ELECTROMAG] The change in amplitude of a radar echo due to a target of some complexity changing its attitude or structural features. Fluctuations can be rapid (pulse-to-pulse) or somewhat slow (scan-to-scan). { ˌflək·chə'wā·shən }

fluid amplifier [ENG] An amplifier in which all amplification is achieved by interaction between jets of fluid, with no electronic circuit and usually no moving parts. { ¦flü·əd 'am·pləˌfī·ər }

fluid computer [COMPUT SCI] A digital computer constructed entirely from air-powered fluid logic elements; it contains no moving parts and no electronic circuits; all logic functions are carried out by interaction between jets of air. { ¦flü·əd kəm¦pyüd·ər }

fluorescent lamp [ELECTR] A tubular discharge lamp in which ionization of mercury vapor produces radiation that activates the fluorescent coating on the inner surface of the glass. { flù ¦res·ənt 'lamp }

fluorescent screen [ENG] A sheet of material coated with a fluorescent substance so as to emit visible light when struck by ionizing radiation such as x-rays or electron beams. { flù¦res·ənt 'skrēn }

fluoroscopic image intensifier [ELECTR] An electron-beam tube that converts a relatively feeble fluoroscopic image on the fluorescent input phosphor into a much brighter image on the output phosphor. { ˌflůr·ə'skäp·ik 'im·ij in'ten·səˌfī·ər }

flush left *See* left-justify. { ¦fləsh 'left }

flush right *See* right-justify. { ¦fləsh 'rīt }

flute storage [ELECTR] Ferrite storage consisting of a number of parallel lengths of fine prism-shaped tubing, each surrounding an insulated axial conductor that acts as a word line; the lengths of tubing are intersected at right angles by parallel sets of insulated wire bit lines that are displaced slightly from the word lines; each intersection stores one bit. { ¦flüt ¦stȯr·ij }

flutter [ELECTROMAG] A fast-changing variation in received signal strength, such as may be caused by antenna movements in a high wind or interaction with a signal or another frequency. { 'fləd·ər }

flutter echo [ELECTROMAG] A radar echo consisting of a rapid succession of reflected pulses resulting from a single transmitted pulse. { 'fləd·ər ˌek·ō }

flux-compression generator [ELEC] A type of impulse generator in which megajoules of energy can be generated within microseconds by abruptly reducing the volume of a closed conducting cage that surrounds a region in which a magnetic field is established. Also known as magnetic cumulative generator. { ¦fləks kəm ˌpresh·ən 'jen·əˌrād·ər }

flux gate [ENG] A detector that gives an electric signal whose magnitude and phase are proportional to the magnitude and direction of the external magnetic field acting along its axis; used to indicate the direction of the terrestrial magnetic field. { 'fləks ˌgāt }

flyback [ELECTR] The time interval in which the electron beam of a cathode-ray tube returns to its starting point after scanning one line or one field of a video. Also known as retrace; return trace. { 'flīˌbak }

flyback power supply [ELECTR] A high-voltage power supply used to produce the direct-current voltage of about 10,000–25,000 volts required for the second anode of a cathode-ray tube in a video display. { 'flīˌbak 'paůr səˌplī }

flyback transformer *See* horizontal output transformer. { 'flīˌbak tranz,fȯr·mər }

flying-aperture scanner [ELECTR] An optical scanner, used in character recognition, in which a document is flooded with light, and light is collected sequentially spot by spot from the illuminated image. { ¦flī·iŋ ¦ap·ər·chər ˌskan·ər }

flying head [ELECTR] A read/write head used on magnetic disks and drums, so designed that it flies a microscopic distance off the moving magnetic surface and is supported by a film of air. { ¦flī·iŋ 'hed }

flying spot [ELECTR] A small point of light, controlled mechanically or electrically, which moves rapidly in a rectangular scanning pattern in a flying-spot scanner. { ¦flī·iŋ 'spät }

flying-spot scanner [ELECTR] A scanner used for video film and slide transmission, electronic writing, and character recognition, in which a moving spot of light, controlled mechanically or electrically, scans the image field, and the light reflected from or transmitted by the image field is picked up by a device that generates a corresponding electric signal output. Also known as optical scanner. { ¦flī·iŋ ˌspät 'skan·ər }

flywheel synchronization [ELECTR] Automatic frequency control of a scanning system by using the average timing of the incoming sync signals, rather than by making each pulse trigger the scanning circuit; used in analog television receivers designed for fringe-area reception, when noise pulses might otherwise trigger the sweep circuit prematurely. { 'flīˌwēl ˌsiŋ·krə·nə'zā·shən }

FM *See* frequency modulation.

FM/AM multiplier [ELECTR] Multiplier in which the frequency deviation from the central frequency of a carrier is proportional to one variable, and its amplitude is proportional to the other variable; the frequency-amplitude-modulated carrier is then consecutively demodulated for frequency modulation (FM) and for amplitude modulation (AM); the final output is proportional to the product of the two variables. { 'efˌem 'āˌem 'məl·təˌplī·ər }

focal-plane array [ELECTR] A photodetector that has up to a million photosensors on a single semiconductor silicon chip arranged in a rectangular grid matrix that is placed in the focal plane of an optical instrument. { ¦fō·kəl ˌplān ə'rā }

focus [ELECTR] To control convergence or divergence of the electron paths within one or more beams, usually by adjusting a voltage or current in a circuit that controls the electric or magnetic fields through which the beams pass, in order

to obtain a desired image or a desired current density within the beam. { 'fō·kəs }

focus control [ELECTR] A control that adjusts spot size at the screen of a cathode-ray tube to give the sharpest possible image; it may vary the current through a focusing coil or change the position of a permanent magnet. { 'fō·kəs kən ˌtrōl }

focused-current log [ENG] A resistivity log that is obtained by means of a multiple-electrode arrangement. { ¦fō·kəst ¦kə·rənt 'läg }

focusing anode [ELECTR] An anode used in a cathode-ray tube to change the size of the electron beam at the screen; varying the voltage on this anode alters the paths of electrons in the beam and thus changes the position at which they cross or focus. { 'fō·kəs·iŋ ˌanˌōd }

focusing coil [ELECTR] A coil that produces a magnetic field parallel to an electron beam for the purpose of focusing the beam. { 'fō·kəs·iŋ ˌkȯil }

focusing electrode [ELECTR] An electrode to which a potential is applied to control the cross-sectional area of the electron beam in a cathode-ray tube. { 'fō·kəs·iŋ iˌlekˌtrōd }

focusing magnet [ELECTR] A permanent magnet used to produce a magnetic field for focusing an electron beam. { 'fō·kəs·iŋ ˌmag·nət }

focus lamp [ELEC] **1.** A lamp whose filament has a spiral or zigzag form in order to reduce its size, so that it can be brought into the focus of a lens or mirror. **2.** An arc lamp whose feeding mechanism is designed to hold the arc in a constant position with respect to an optical system that is used to focus its rays. { 'fō·kəs ˌlamp }

focus projection and scanning [ELECTR] Method of magnetic focusing and electrostatic deflection of the electron beam of a hybrid vidicon; a transverse electrostatic field is used for beam deflection; this field is immersed with an axial magnetic field that focuses the electron beam. { ¦fō·kəs prəˌjek·shən ən 'skan·iŋ }

foil electret [ELEC] A thin film of strongly insulating material capable of trapping charge carriers, such as polyfluoroethylenepropylene, that is electrically charged to produce an external electric field; in the conventional design, charge carriers of one sign are injected into one surface, and a compensation charge of opposite sign forms on the opposite surface or an adjacent electrode. { ¦fȯil i'lek·trət }

folded cavity [ELECTR] Arrangement used in a klystron repeater to make the incoming wave act on the electron stream from the cathode at several places and produce a cumulative effect. { ¦fōld·əd 'kav·əd·ē }

folded dipole *See* folded-dipole antenna. { ¦fōld·əd 'dīˌpōl }

folded-dipole antenna [ELECTROMAG] A dipole antenna whose outer ends are folded back and joined together at the center; the impedance is about 300 ohms, as compared to 70 ohms for a single-wire dipole; widely used with television and frequency-modulation receivers. Also known as folded dipole. { ¦fōld·əd 'dīˌpōl anˈten·ə }

folded horn [ENG ACOUS] An acoustic horn in which the path from throat to mouth is folded or curled to give the longest possible path in a given volume. { ¦fōld·əd 'hȯrn }

folding [COMPUT SCI] A method of hashing which consists of splitting the original key into two or more parts and then adding the parts together. { 'fōld·iŋ }

foldover [ELECTR] Picture distortion seen as a white line on the side, top, or bottom of a television picture; generally caused by nonlinear operation in either the horizontal or vertical deflection circuits of a receiver. { 'fōlˌdō·vər }

Foley pits [ENG ACOUS] Open boxes that are used in ADR studios and contain various materials (such as water, sand, gravel, rice, and nails) for generating sound effects that could not be recorded well during filming or video recording. { 'fō·lē ˌpits }

follow current [ELEC] The current at power frequency that passes through a surge diverter or other discharge path after a high-voltage surge has started the discharge. { 'fäl·ō ˌkə·rənt }

following error [CONT SYS] The difference between commanded and actual positions in contouring control. { 'fäl·ə·wiŋ ˌer·ər }

follow spot [ELEC] A high-intensity spotlight used to follow action in arenas and stadiums and on large stages; it is equipped with adjustable iris and shutter controls, and its light source is either a carbon arc or an incandescent bulb. { 'fäl·ō ˌspät }

font cartridge [COMPUT SCI] A removable module that can be plugged into a slot in a printer and has one or more fonts stored in a read-only memory chip. { 'fänt ˌkär·trij }

font compiler *See* font generator. { 'fänt kəm ˌpīl·ər }

font generator [COMPUT SCI] A computer program that converts an outline font into the patterns of dots required for a particular size of font. Also known as font compiler. { 'fänt ˌjen·əˌrād·ər }

footprint [COMMUN] The area of the earth's surface that can be covered by a communications satellite at any given time. [COMPUT SCI] The amount and shape of the area occupied by equipment, such as a terminal or microcomputer, on desktop, floor, or other surface area. { 'fůtˌprint }

forbidden-character code [COMPUT SCI] A bit code which exists only when an error occurs in the binary coding of characters. { fərˈbid·ən 'kar·ik·tər ˌkōd }

forbidden-combination check [COMPUT SCI] A test for the occurrence of a nonpermissible code expression in a computer; used to detect computer errors. { fərˈbid·ən ˌkäm·bəˈna·shən ˌchek }

force [COMPUT SCI] To intervene manually in a computer routine and cause the computer to execute a jump instruction. { fȯrs }

force-controlled motion commands [CONT SYS] Robot control in which motion information is provided by computer software but sensing of

forces or feedback is used by the robot to adapt this information to the environment. { 'fȯrs kən ˌtrōld 'mō·shən kaˌmanz }

forced programming *See* minimum-access programming. { ˌfȯrst 'prōˌgram·iŋ }

force feedback [CONT SYS] A method of error detection in which the force exerted on the effector is sensed and fed back to the control, usually by mechanical, hydraulic, or electric transducers. { ˌfȯrs ˌfēdˌbak }

forecasting [COMMUN] The prediction of conditions of radio propagation for a period extending anywhere from a few hours to a few months. { 'fȯrˌkast·iŋ }

foreground [COMPUT SCI] A program or process of high priority that utilizes machine facilities as needed, with less critical, background work performed in otherwise unused time. { 'fȯr ˌgraund }

fork-join model [COMPUT SCI] A method of programming on parallel machines in which one or more child processes branch out from the root task when it is time to do work in parallel, and end when the parallel work is done. { 'fȯrk ˌjȯin 'mād·əl }

fork oscillator [ELECTR] An oscillator that uses a tuning fork as the frequency-determining element. { ˌfȯrk ˌäs·əˌlād·ər }

formal language [COMPUT SCI] An abstract mathematical object used to model the syntax of a programming or natural language. { ˌfȯr·məl 'laŋ·gwij }

format [COMPUT SCI] **1.** The specific arrangement of data on a printed page, display screen, or such, or in a record, data file, or storage device. **2.** To prepare a disk to store information by using a special program that divides the disk into storage units such as tracks and sectors. { 'fȯrˌmat }

format effector *See* layout character. { 'fȯrˌmat iˌfek·tər }

formatted tape [COMPUT SCI] A magnetic tape which employs a prerecorded timing track by means of which blocks of data can be found after reference to a directory table. { fȯrˌmad·əd 'tāp }

formatting [COMPUT SCI] The preparation of a magnetic storage device to receive data structures; for example, the recording of track and sector information on a floppy disk. { 'fȯr ˌmad·iŋ }

form factor [ELEC] **1.** The ratio of the effective value of a periodic function, such as an alternating current, to its average absolute value. **2.** A factor that takes the shape of a coil into account when computing its inductance. Also known as shape factor. { 'fȯrm ˌfak·tər }

form feed character [COMPUT SCI] A control character that determines when a printer or display device moves to the next page, form, or equivalent unit of data. { 'fȯrm ˌfēd ˌkar·ik·tər }

form feeding [COMPUT SCI] The positioning of documents in order to move them past printing or sensing devices, either singly or in continuous rolls. { 'fȯrm ˌfēd·iŋ }

form feed printer [COMPUT SCI] A computer printer that accepts continuous forms or continuous sheets of paper. { 'fȯrm ˌfēd ˌprint·ər }

forming [ELEC] Application of voltage to an electrolytic capacitor, electrolytic rectifier, or semiconductor device to produce a desired permanent change in electrical characteristics as a part of the manufacturing process. { 'fȯrm·iŋ }

forms [COMPUT SCI] Web pages that allow users to fill in and submit information, they are written in HTML and processed by CGI scripts. { fȯrmz }

forms control buffer [COMPUT SCI] A reserved storage containing coordinates for a page position on the printer; earlier printers utilized a carriage control tape, allowing the page to be set at a specific position. { 'fȯrmz kənˌtrōl 'bəf·ər }

form stop [COMPUT SCI] A device which stops a machine when its supply of paper has run out. { 'fȯrm ˌstäp }

formula translation *See* FORTRAN. { ˌfȯr·myə·lə tranzˌlā·shən }

form-wound coil [ELEC] Armature coil that is formed or shaped over a fixture before being placed on the armature of a motor or generator. { 'fȯrm ˌwaund ˌkȯil }

for-next loop [COMPUT SCI] In computer programming, a high-level logic statement which defines a part of a computer program that will be repeated a certain number of times. { ˌfȯr ˌnekst ˌlüp }

fors *See* G. { fȯrs }

FOR statement [COMPUT SCI] A statement in a computer program that is repeatedly executed a specified number of times, generally while a control variable takes on successive values over a specified range. { 'fȯr ˌstāt·mənt }

Forth [COMPUT SCI] A high-level programming language developed primarily for microcomputers and characterized by a number of features that make it highly adaptable and readily extensible, such as the ability to be used as an interpreter or an operating system. { fȯrth }

FORTRAN [COMPUT SCI] A family of procedure-oriented languages used mostly for scientific or algebraic applications; derived from formula translation. { 'fȯrˌtran }

forty-four-type repeater [ELECTR] Type of telephone repeater employing two amplifiers and no hybrid arrangements; used in a four-wire system. { ˌfȯrd·ēˌfȯr ˌtīp ri'pēd·ər }

forum *See* newsgroup. { 'fȯr·əm }

forward-acting regulator [ELECTR] Transmission regulator in which the adjustment made by the regulator does not affect the quantity which caused the adjustment. { 'fȯr·wərd ˌak·tiŋ 'reg·yəˌlād·ər }

forward-backward counter [COMPUT SCI] A counter that has both an add and a subtract input so as to count in either an increasing or a decreasing direction. Also known as bidirectional counter. { ˌfȯr·wərd ˌbak·wərd 'kaunt·ər }

forward bias [ELECTR] A bias voltage that is applied to a pn-junction in the direction that causes a large current flow; used in some semiconductor diode circuits. { ˌfȯr·wərd 'bī·əs }

forward chaining [COMPUT SCI] In artificial intelligence, a method of reasoning which begins with a statement of all the relevant data and works toward the solution using the system's rules of inference. { ¦fȯr·wərd 'chān·iŋ }

forward compatibility *See* upward compatibility. { ¦fȯr·wərd kəm¸pad·ə'bil·əd·ē }

forward coupler [ELECTR] Directional coupler used to sample incident power. { ¦fȯr·wərd 'kəp·lər }

forward current [ELECTR] Current which flows upon application of forward voltage. { ¦fȯr·wərd 'kə·rənt }

forward direction [ELECTR] Of a semiconductor diode, the direction of lower resistance to the flow of steady direct current. { ¦fȯr·wərd də'rek·shən }

forward drop [ELECTR] The voltage drop in the forward direction across a rectifier. { ¦fȯr·wərd 'dräp }

forward error analysis [COMPUT SCI] A method of error analysis based on the assumption that small changes in the input data lead to small changes in the results, so that bounds for the errors in the results caused by rounding or truncation errors in the input can be calculated. { ¦fȯr·wərd 'er·ər ə¸nal·ə·səs }

forward error correction [COMMUN] The location and correction of errors occurring in data communications by the receiver without retransmission of data. { 'fȯr·wərd 'er·ər kə¸rek·shən }

forward path [CONT SYS] The transmission path from the loop actuating signal to the loop output signal in a feedback control loop. { 'fȯr·wərd ¸path }

forward propagation by ionospheric scatter [COMMUN] Radio communications technique using the scattering phenomenon exhibited by electromagnetic waves in the 30–100-megahertz region when passing through the ionosphere at an elevation of about 50 miles (85 kilometers). { ¦fȯr·wərd ¸präp·ə¸gā·shən bī ī'än·ə¸sfir·ik ¸skad·ər }

forward propagation by tropospheric scatter [COMMUN] Radio communications technique using high transmitting power levels, large antenna arrays, and the scattering phenomenon of the troposphere to permit communications far beyond line-of-sight distances. { ¦fȯr·wərd ¸präp·ə ¸gā·shən bī 'träp·ə¸sfir·ik ¸skad·ər }

forward recovery time [ELECTR] Of a semiconductor diode, the time required for the forward current or voltage to reach a specified value after instantaneous application of a forward bias in a given circuit. { ¦fȯr·wərd ri'kəv·ə·rē ¸tīm }

forward reference [COMPUT SCI] Reference to a data element that has not yet been defined in the program being compiled. { 'fȯr·wərd 'ref·rəns }

forward resistance [ELECTR] The resistance of a semiconductor diode to current flow in the forward direction. { 'fȯr·wərd ri'zis·təns }

forward scatter [COMMUN] **1.** Propagation of electromagnetic waves at frequencies above the maximum usable high frequency through use of the scattering of a small portion of the transmitted energy when the signal passes from an unionized medium into a layer of the ionosphere. **2.** Collectively, the very-high-frequency forward propagation by ionospheric scatter and ultra-high-frequency forward propagation by tropospheric scatter communications techniques. { ¦fȯr·wərd 'skad·ər }

forward-scatter propagation *See* scatter propagation. { ¦fȯr·wərd ¦skad·ər präp·ə'gā·shən }

forward transfer function [CONT SYS] In a feedback control loop, the transfer function of the forward path. { ¦fȯr·wərd 'tranz·fər ¸fəŋk·shən }

forward voltage drop *See* diode forward voltage. { ¦fȯr·wərd 'vōl·tij ¸dräp }

forward wave [ELECTR] Wave whose group velocity is the same direction as the electron stream motion. { ¦fȯr·wərd ¦wāv }

Foster-Seely discriminator *See* phase-shift discriminator. { ¦fȯs·tər ¦sē·lē di'skrim·ə¸nād·ər }

Foster's reactance theorem [CONT SYS] The theorem that the most general driving point impedance or admittance of a network, in which every mesh contains independent inductance and capacitance, is a meromorphic function whose poles and zeros are all simple and occur in conjugate pairs on the imaginary axis, and in which these poles and zeros alternate. { 'fȯs·tərz rē'ak·təns ¸thir·əm }

four-address [COMPUT SCI] Pertaining to an instruction address which contains four address parts. { 'fȯr ə¸dres }

four-channel sound system *See* quadraphonic sound system. { ¦fȯr ¦chan·əl 'saund ¸sis·təm }

four-frequency diplex telegraphy [COMMUN] Frequency-shift telegraphy in which each of the four possible signal combinations corresponding to two telegraph channels is represented by a separate frequency. { ¦fȯr ¦frē·kwən·sē ¦dī¸pleks tə'leg·rə·fē }

Fourier analyzer [ENG] A digital spectrum analyzer that provides push-button or other switch selection of averaging, coherence function, correlation, power spectrum, and other mathematical operations involved in calculating Fourier transforms of time-varying signal voltages for such applications as identification of underwater sounds, vibration analysis, oil prospecting, and brain-wave analysis. { ¸fu̇r·ē¸ā 'an·ə¸līz·ər }

four-layer device [ELECTR] A *pnpn* semiconductor device, such as a silicon controlled rectifier, that has four layers of alternating *p*-and *n*-type material to give three *pn* junctions. { ¦fȯr ¦lā·ər di'vīs }

four-layer diode [ELECTR] A semiconductor diode having three junctions, terminal connections being made to the two outer layers that form the junctions; a Shockley diode is an example. { ¦fȯr ¦lā·ər 'dī¸ōd }

four-layer transistor [ELECTR] A junction transistor having four conductivity regions but only three terminals; a thyristor is an example. { ¦fȯr ¦lā·ər tran'zis·tər }

four-phase modulation [COMMUN] Modulation in which data are encoded on a carrier frequency as a succession of phase shifts that will be 45,

135, 225, or 315°; each phase shift contains 2 bits of information called dibits, as follows: 225° represents 00, 315° is 01, 45° is 11, and 135° is 10. { ¦fór ¦fāz ˌmāj·ə'lā·shən }

four-plus-one address |COMPUT SCI| An instruction that contains four operand addresses and a control address. { ¦fór ˌpləs ¦wən ə'dres }

four-pole double-throw |ELEC| A 12-terminal switch or relay contact arrangement that simultaneously connects two pairs of terminals to either of two other pairs of terminals. Abbreviated 4PDT. { ¦fór 'pōl ¦dəb·əl 'thrō }

four-quadrant multiplier |COMPUT SCI| A multiplier in an analog computer in which both the reference signal and the number represented by the input may be bipolar, and the multiplication rules for algebraic sign are obeyed. Also known as quarter-square multiplier. { ¦fór ¦kwäd·rənt 'məl·təˌplī·ər }

four-tape |COMPUT SCI| To sort input data, supplied on two tapes, into incomplete sequences alternately on two output tapes; the output tapes are used for input on the succeeding pass, resulting in longer and longer sequences after each pass, until the data are all in one sequence on one output tape. { ¦fór ¦tāp }

fourth-generation computer |COMPUT SCI| A type of general-purpose digital computer used in the 1970s and 1980s that is characterized by increasingly advanced very large-scale integrated circuits and increasing use of a hierarchy of memory devices. { 'fórth ˌjen·ə¦rā·shən kəm'pyüd·ər }

fourth-generation language |COMPUT SCI| A higher-level programming language that automates many of the basic functions that must be spelled out in conventional languages, and can obtain results with an order-of-magnitude less coding because of its richer content of commands. { 'fórth ˌjen·ə¦rā·shən 'laŋ·gwij }

four-track tape |ENG ACOUS| Magnetic tape on which two tracks are recorded for each direction of travel, to provide stereo sound reproduction or to double the amount of source material that can be recorded on a given length of 1/4-inch (0.635-centimeter) tape. { 'fór ˌtrak 'tāp }

four-way switch |ELEC| An electric switch employed in house wiring, that makes it possible to turn a light on or off at three or more places. { 'fór ˌwā 'swich }

four-wire circuit |COMMUN| A two-way circuit using two paths so arranged that communication currents are transmitted in one direction only on one path, and in the opposite direction on the other path; the transmission path may or may not employ four wires. { 'fór ˌwīr 'sər·kət }

four-wire repeater |ELECTR| Telephone repeater for use in a four-wire circuit and in which there are two amplifiers, one serving to amplify the telephone currents in one side of the fourwire circuit, and the other serving to amplify the telephone currents in the other side of the four-wire circuit. { 'fór ˌwīr ri'pēd·ər }

four-wire subscriber line |COMMUN| Four-wire circuit connecting a subscriber directly to a switching center. { 'fór ˌwīr səb'skrīb·ər ˌlīn }

four-wire terminating set |ELECTR| Hybrid arrangement by which four-wire circuits are terminated on a two-wire basis for interconnection with two-wire circuits. { 'fór ˌwīr 'tər·məˌnād·iŋ ˌset }

fox |COMPUT SCI| A name for the hexadecimal digit whose decimal equivalent is 15. { fäks }

Fox broadcast |COMMUN| Radio broadcast of messages for which receiving stations make no acknowledgment. { 'fäks ˌbrȯdˌkast }

FPLA *See* field-programmable logic array.

Fr *See* statcoulomb.

fractional horsepower motor |ELEC| Any motor built into a frame smaller than that for a motor having an open construction and a continuous rating of 1 horsepower (745.7 watts) at 1800 revolutions per minute. { ¦frak·shən·əl ¦hȯrs ˌpaù·ər 'mōd·ər }

fractional quantum Hall effect |ELECTR| The version of the quantum Hall effect in which the Hall resistance becomes precisely equal to $h/(p/q)e^2$, where h is Planck's constant, e is the electronic charge, q is an odd integer, and p is an integer not divisible by q. { ¦frak·shən·əl 'kwän·təm 'hȯl iˌfekt }

fragmentation |COMPUT SCI| The tendency of files in disk storage to be divided up into many small areas scattered around the disk. { ˌfrag·mən'tā·shən }

fragmenting |COMPUT SCI| The breaking up of a document into its various components. { 'frag ˌment·iŋ }

Frahm frequency meter *See* vibrating-reed frequency metery. { 'främ 'frē·kwən·sē ˌmēd·ər }

frame |COMMUN| **1.** One cycle of a regularly recurring series of pulses. **2.** An elementary block of data for transmission over a network or communications system. |COMPUT SCI| **1.** Subdivision of a browser window, with each section containing a separate Web page. **2.** *See* main frame. |ELECTR| One complete representation of a video image. { frām }

frame buffer |COMPUT SCI| A device that stores a television picture or frame for processing. { 'frām ˌbəf·ər }

frame frequency |ELECTR| The number of times per second that the frame is completely scanned in a video system. Also known as picture frequency. { 'frām ˌfrē·kwən·sē }

frame grabber |COMPUT SCI| An external device that digitizes standard television video images for storage or processing in a computer. { 'frām ˌgrab·ər }

frame period |ELECTR| A time interval equal to the reciprocal of the frame frequency. { 'frām ˌpir·ē·əd }

framer |ELECTR| Device for adjusting facsimile equipment so the start and end of a recorded line are the same as on the corresponding line of the subject copy. { 'frām·ər }

framing |ELECTR| Adjusting a facsimile picture to a desired position in the direction of line progression. Also known as phasing. { 'frām·iŋ }

framing control |ELECTR| **1.** A control that adjusts the centering, width, or height of the image

on a video display device. **2.** A control that shifts a received facsimile picture horizontally. { 'frām·iŋ kən,trō }

Franck-Hertz experiment [ELECTR] Experiment for measuring the kinetic energy lost by electrons in inelastic collisions with atoms; it established the existence of discrete energy levels in atoms, and can be used to determine excitation and ionization potentials. { ¦fräŋk 'hərts ik ,sper·ə·mənt }

franklin *See* statcoulomb. { 'fraŋk·lən }

franklin centimeter [ELEC] A unit of electric dipole moment, equal to the dipole moment of a charge distribution consisting of positive and negative charges of 1 statcoulomb separated by a distance of 1 centimeter. { 'fraŋk·lən 'sent·ə ,mēd·ər }

Franklin equation [ENG ACOUS] An equation for intensity of sound in a room as a function of time after shutting off the source, involving the volume and exposed surface area of the room, the speed of sound, and the mean sound-absorption coefficient. { 'fraŋk·lən i,kwā·zhən }

Fraunhofer region [ELECTROMAG] The region far from an antenna compared to the dimensions of the antenna and the wavelength of the radiation. Also known as far field; far region; far zone; radiation zone. { 'fraun,hōf·ər ,rē·jən }

free admittance [ELEC] The reciprocal of the blocked impedance of a transducer. { ¦frē əd'mit·əns }

free charge [ELEC] Electric charge which is not bound to a definite site in a solid, in contrast to the polarization charge. { ¦frē 'chärj }

free field [COMPUT SCI] A property of information retrieval devices which permits recording of information in the search medium without regard to preassigned fixed fields. { 'frē ,fēld }

free-field storage [COMPUT SCI] Data storage that allows recording of the data without regard for fixed or preassigned fields. { 'frē ,fēld ,stȯr·ij }

freeform language [COMPUT SCI] A programming or command language that does not require rigid formatting. { ¦frē,fȯrm 'laŋ·gwij }

freeform text [COMPUT SCI] A record, or a variable-length portion of a record, that stores plain, unformatted English. { 'frē,fȯrm 'tekst }

free grid *See* floating grid. { 'frē ,grid }

free impedance [ELECTR] Impedance at the input of the transducer when the impedance of its load is made zero. Also known as normal impedance. { ¦frē im'pēd·əns }

free motional impedance [ELECTR] Of a transducer, the complex remainder after the blocked impedance has been subtracted from the free impedance. { ¦frē ¦mō·shən·əl im'pēd·əns }

freenet [COMPUT SCI] A bulletin board system, based in a public library or other community or government organization, that provides access to useful resources. { 'frē,net }

free-running frequency [ELECTR] Frequency at which a normally driven oscillator operates in the absence of a driving signal. { ¦frē ,rən·iŋ ,frē·kwən·sē }

free-running multivibrator *See* astable multivibrator. { 'frē ,rən·iŋ məl·tə'vī,brād·ər }

free-running sweep [ELECTR] Sweep triggered continuously by an internal trigger generator. { 'frē ,rən·iŋ 'swēp }

free-space field intensity [ELECTROMAG] Radio field intensity that would exist at a point in a uniform medium in the absence of waves reflected from the earth or other objects. { 'frē ,spās 'fēld in,ten·səd·ē }

free-space loss [ELECTROMAG] The theoretical radiation loss, depending only on frequency and distance, that would occur if all variable factors were disregarded when transmitting energy between two antennas. { 'frē ,spās ,lȯs }

free-space propagation [ELECTROMAG] Propagation of electromagnetic radiation over a straight-line path in a vacuum or ideal atmosphere, sufficiently removed from all objects that affect the wave in any way. { 'frē ,spās ,präp·ə'gā·shən }

free-space radiation pattern [ELECTROMAG] Radiation pattern that an antenna would have if it were in free space where there is nothing to reflect, refract, or absorb the radiated waves. { 'frē ,spās rād·ē'ā·shən ,pad·ərn }

free symbol [COMPUT SCI] A contextual symbol preceded and followed by a space; it is always meaningful and always used to symbolize both grammatical and nongrammatical meaning; an example is the English "I." { ¦frē 'sim·bəl }

free symbol sequence [COMPUT SCI] A symbol sequence not preceded, or not followed, or neither preceded nor followed by space. { ¦frē 'sim·bəl 'sēk·wəns }

freeware [COMPUT SCI] Copyrighted software that is downloaded from the Internet for which there is no charge. { 'frē,wer }

frequency agility [ELECTR] A feature of modern radar permitting rapid changes of the carrier frequency within the band of operating frequencies for which the radar is designed; electronic rather than mechanical tuning permits pulse-to-pulse agility. { 'frē·kwən·sē ə,jil·əd·ē }

frequency allocation [COMMUN] Assignment of available frequencies in the radio spectrum to specific stations and for specific purposes, to give maximum utilization of frequencies with minimum interference between stations. { 'frē·kwən·sē ,al·ə'kā·shən }

frequency analysis [COMPUT SCI] A determination of the number of times certain parts of an algorithm are executed, indicating which parts of the algorithm consume large quantities of time and hence where efforts should be directed toward improving the algorithm. { 'frē·kwən·sē ə,nal·ə·səs }

frequency analyzer [ELECTR] A device which measures the intensity of many different frequency components in some oscillation, as in a radio band; used to identify transmitting sources. { 'frē·kwən·sē 'an·ə,līz·ər }

frequency-azimuth intensity [ELECTR] Type of radar display in which frequency, azimuth, and strobe intensity are correlated. { ¦frē·kwən·sē ¦az·ə·məth in,ten·səd·ē }

frequency bridge [ELECTR] A bridge in which the balance varies with frequency in a known manner, such as the Wien bridge; used to measure frequency. { 'frē·kwən·sē ˌbrij }

frequency carrier system [COMMUN] A form of frequency division multiplex in which intelligence is carried on subcarriers. { 'frē·kwən·sē ˌkar·ē·ər ˌsis·təm }

frequency changer See frequency converter. { 'frē·kwən·sē ˌchānj·ər }

frequency-changer station [ELEC] An installation at which power is transmitted between two alternating-current electric power systems operating at different frequencies by a direct-current link. { 'frē·kwən·sē ˌchānj·ər ˌstā·shən }

frequency characteristic See frequency-response curve. { ¦frē·kwən·sē ˌkar·ik·tə'ris·tik }

frequency compensation See compensation. { ¦frē·kwən·sē ˌkäm·pən'sā·shən }

frequency conversion [ELECTR] Converting the carrier frequency of a received signal from its original value to the intermediate frequency value in a superheterodyne receiver. { 'frē·kwən·sē kən ˌvər·zhən }

frequency converter [ELEC] A circuit, device, or machine that changes an alternating current from one frequency to another, with or without a change in voltage or number of phases. Also known as frequency changer; frequency translator. { 'frē·kwən·sē kənˌvərd·ər }

frequency counter [ELECTR] An electronic counter used to measure frequency by counting the number of cycles in an electric signal during a preselected time interval. { 'frē·kwən·sē ˌkaùnt·ər }

frequency cutoff [ELECTR] The frequency at which the current gain of a transistor drops 3 decibels below the low-frequency gain value. { ¦frē·kwən·sē 'kəd,ȯf }

frequency deviation [COMMUN] The peak difference between the instantaneous frequency of a frequency-modulated wave and the carrier frequency. { ¦frē·kwən·sē ˌdē·vē'ā·shən }

frequency discriminator [ELECTR] A discriminator circuit that delivers an output voltage which is proportional to the deviations of a signal from a predetermined frequency value. { ¦frē·kwən·sē di'skrim·əˌnād·ər }

frequency distortion [ELECTR] Distortion in which the relative magnitudes of the different frequency components of a wave are changed during transmission or amplification. Also known as amplitude distortion; amplitude-frequency distortion; waveform-amplitude distortion. { ¦frē·kwən·sē di'stȯr·shən }

frequency diversity [COMMUN] Diversity reception involving the use of carrier frequencies separated 500 hertz or more and having the same modulation, to take advantage of the fact that fading does not occur simultaneously on different frequencies. { ¦frē·kwən·sē də'vər·səd·ē }

frequency divider [ELECTR] A harmonic conversion transducer in which the frequency of the output signal is an integral submultiple of the input frequency. Also known as counting-down circuit. { 'frē·kwən·sē di,vīd·ər }

frequency-division data link [COMMUN] Data link using frequency division techniques for channel spacing. { 'frē·kwən·sē di,vizh·ən 'dad·ə ˌliŋk }

frequency-division multiple access [COMMUN] A technique by which multiple users who are geographically dispersed gain access to a communications channel to which they are assigned distinct and nonoverlapping sections of the electromagnetic spectrum. Abbreviated FDMA. { ¦frē·kwən·sē di¦vizh·ən ˌməl·tə·pəl 'ak,ses }

frequency-division multiplexing [COMMUN] A multiplex system for transmitting two or more signals over a common path by using a different frequency band for each signal. Abbreviated fdm; FDM. Also known as frequency multiplexing. { 'frē·kwən·sē di,vizh·ən 'məl·tə,plek·siŋ }

frequency domain [COMMUN] A plane on which signal strength can be represented graphically as a function of frequency, instead of a function of time. [CONT SYS] Pertaining to a method of analysis, particularly useful for fixed linear systems in which one does not deal with functions of time explicitly, but with their Laplace or Fourier transforms, which are functions of frequency. { 'frē·kwən·sē dəˌmān }

frequency-domain optical storage [COMPUT SCI] A technique whereby up to 1000 bits of information would be stored at each spatial location in an optical storage medium by using persistent spectral holeburning. { 'frē·kwən·sē dəˌmān 'äp·tə·kəl 'stȯr·ij }

frequency doubler [ELECTR] An amplifier stage whose resonant anode circuit is tuned to the second harmonic of the input frequency; the output frequency is then twice the input frequency. Also known as doubler. { 'frē·kwən·sē ˌdəb·lər }

frequency drift [ELECTR] A gradual change in the frequency of an oscillator or transmitter due to temperature or other changes in the circuit components that determine frequency. { 'frē·kwən·sē ˌdrift }

frequency frogging [COMMUN] Interchanging of frequency allocations for carrier channels to prevent singing, reduce crosstalk, and reduce the need for equalization; modulators in each repeater translate a low-frequency group to a high-frequency group, and vice versa. { 'frē·kwən·sē ˌfräg·iŋ }

frequency hopping [COMMUN] A spread-spectrum technique in which the frequency of the carrier changes pseudorandomly according to a pseudonoise code, with a consecutive group of code symbols defining a particular frequency. { 'frē·kwən·sē ˌhäp·iŋ }

frequency interlace [COMMUN] Carrier chrominance signal frequency chosen so I and Q sidebands are interwoven with luminance sidebands in the same bandwidth and in a manner that causes no mutual interference. { ¦frē·kwən·sē 'in·tərˌlās }

frequency locus [CONT SYS] The path followed by the frequency transfer function or its inverse, either in the complex plane or on a graph of amplitude against phase angle; used in determining

zeros of the describing function. { 'frē·kwən·sē ˌlō·kəs }

frequency meter [ENG] **1.** An instrument for measuring the frequency of an alternating current; the scale is usually graduated in hertz, kilohertz, and megahertz. **2.** A device calibrated to indicate frequency of a radio wave. { 'frē·kwən·sē ˌmēd·ər }

frequency-modulated carrier current telephony [COMMUN] Telephony involving the use of a frequency-modulated carrier signal transmitted over power-line wires or other wires. { 'frē·kwən·sē ˌmäj·əˌlād·əd 'kar·ē·ər 'kə·rənt tə'lef·ə·nē }

frequency-modulated jamming [ELECTR] Jamming technique consisting of a constant amplitude radio-frequency signal that is varied in frequency about a center frequency to produce a signal over a band of frequencies. { 'frē·kwən·sē ˌmäj·əˌlād·əd 'jam·iŋ }

frequency-modulated radar [ENG] Form of radar in which the radiated wave is frequency modulated, and the returning echo beats with the wave being radiated, thus enabling range to be measured. { 'frē·kwən·sē ˌmäj·əˌlād·əd 'rāˌdär }

frequency modulation [COMMUN] Modulation in which the instantaneous frequency of the modulated wave differs from the carrier frequency by an amount proportional to the instantaneous value of the modulating wave. Abbreviated FM. { 'frē·kwən·sē ˌmäj·əˌlā·shən }

frequency-modulation broadcast band [COMMUN] The band of frequencies extending from 88 to 108 megahertz; used for frequency-modulation radio broadcasting in the United States. { 'frē·kwən·sē ˌmäj·əˌlā·shən 'brōdˌkast ˌband }

frequency-modulation detector [ELECTR] A device, such as a Foster-Seely discriminator, for the detection or demodulation of a frequency-modulated wave. { 'frē·kwən·sē ˌmäj·əˌlā·shən di'tek·tər }

frequency-modulation Doppler [ENG] Type of radar involving frequency modulation of both carrier and modulation on radial sweep. { 'frē·kwən·sē ˌmäj·əˌlā·shən 'däp·lər }

frequency modulation-frequency modulation [COMMUN] System in which frequency-modulated subcarriers are used to frequency-modulate a second carrier. { 'frē·kwən·sē ˌmäj·əˌlā·shən 'frē·kwən·sē ˌmäj·əˌlā·shən }

frequency-modulation noise level on carrier [COMMUN] Residual frequency modulation resulting from disturbance produced in an aural transmitter operating within the band of 50 to 15,000 hertz. { 'frē·kwən·sē ˌmäj·əˌlā·shən 'nȯiz ˌlev·əl ȯn 'kar·ē·ər }

frequency modulation-phase modulation [COMMUN] System in which the several frequency-modulated subcarriers are used to phase modulate a second carrier. { 'frē·kwən·sē ˌmäj·əˌlā·shən 'fāz ˌmäj·əˌlā·shən }

frequency-modulation receiver [ELECTR] A radio receiver that receives frequency-modulated waves and delivers corresponding sound waves. { 'frē·kwən·sē ˌmäj·əˌlā·shən ri'sē·vər }

frequency-modulation receiver deviation sensitivity [ELECTR] Least frequency deviation that produces a specified output power. { 'frē·kwən·sē ˌmäj·əˌlā·shən ri'sē·vər dē·vēˌā·shən sen·sə'tiv·əd·ē }

frequency-modulation synthesis [ENG ACOUS] A method of synthesizing musical tones which, in its simplest form, is carried out using two digital oscillators, with the output of one adding to the frequency (or phase) control of the other. { ¦frē·kwən·sē ˌmä·jə'lā·shən ˌsin·thə·səs }

frequency-modulation transmitter [ELECTR] A radio transmitter that transmits a frequency-modulated wave. { 'frē·kwən·sē ˌmäj·əˌlā·shən tranz'mid·ər }

frequency-modulation tuner [ELECTR] A tuner containing a radio-frequency amplifier, converter, intermediate-frequency amplifier, and demodulator for frequency-modulated signals, used to feed a low-level audio-frequency signal to a separate audio-frequency amplifier and loudspeaker. { 'frē·kwən·sē ˌmäj·əˌlā·shən 'tün·ər }

frequency modulator [ELECTR] A circuit or device for producing frequency modulation. { ¦frē·kwən·sē 'mäj·əˌlād·ər }

frequency monitor [ELECTR] An instrument for indicating the amount of deviation of the carrier frequency of a transmitter from its assigned value. { 'frē·kwən·sē ˌmän·əd·ər }

frequency multiplexing *See* frequency-division multiplexing. { ¦frē·kwən·sē 'məl·təˌplek·siŋ }

frequency multiplier [ELECTR] A harmonic conversion transducer in which the frequency of the output signal is an exact integral multiple of the input frequency. Also known as multiplier. { ¦frē·kwən·sē 'məl·təˌplī·ər }

frequency offset [COMMUN] A small difference in the carrier frequencies of television stations in adjacent cities operating on the same channel. { ¦frē·kwən·sē 'ȯfˌset }

frequency-offset transponder [ELECTR] Transponder that changes the signal frequency by a fixed amount before retransmission. { ¦frē·kwən·sē ¦ȯf·set tran'spän·dər }

frequency optimum traffic *See* optimum working frequency. { 'frē·kwən·sē ˌäp·tə·məm 'traf·ik }

frequency prediction chart [COMMUN] Graph showing curve for the maximum usable frequency, frequency optimum traffic, and lowest usable frequency between two specific points for various times throughout a 24-hour period. { 'frē·kwən·sē prəˌdik·shən ˌchärt }

frequency pulling [ELECTR] A change in the frequency of an oscillator due to a change in load impedance. { 'frē·kwən·sē ˌpůl·iŋ }

frequency recorder [ELEC] An instrument which uses a frequency bridge to sense the frequency of an alternating current, and which makes a graphical record of this frequency as a function of time. { 'frē·kwən·sē riˌkȯrd·ər }

frequency regulator [ELEC] A device that maintains the frequency of an alternating-current generator at a predetermined value. { 'frē·kwən·sē ˌreg·yəˌlā·dər }

frequency relay [ELECTR] Relay which functions at a predetermined value of frequency, may be an over-frequency relay, an under-frequency relay, or a combination of both. { 'frē·kwən·sē ˌrē,lā }

frequency response [ENG] A measure of the effectiveness with which a circuit, device, or system transmits the different frequencies applied to it; it is a phasor whose magnitude is the ratio of the magnitude of the output signal to that of a sine-wave input, and whose phase is that of the output with respect to the input. Also known as amplitude-frequency response; sine-wave response. { 'frē·kwən·sē riˌspäns }

frequency-response curve [ENG] A graph showing the magnitude or the phase of the freqency response of a device or system as a function of frequency. Also known as frequency characteristic. { 'frē·kwən·sē riˌspäns ˌkərv }

frequency-response equalization See equalization. { 'frē·kwən·sē riˌspäns ˌē·kwə·lə'zā·shən }

frequency-response trajectory [CONT SYS] The path followed in the complex plane by the phasor that represents the frequency response as the frequency is varied. { 'frē·kwən·sē riˌspäns trə'jek·trē }

frequency run [ELECTR] A series of tests made to determine the amplitude-frequency response characteristic of a transmission line, circuit, or device. { 'frē·kwən·sē ˌrən }

frequency scan antenna [ELECTROMAG] A radar antenna similar to a phased array antenna in which one dimensional scanning is accomplished through frequency variation. { 'frē·kwən·sē ˌskan an'ten·ə }

frequency scanning [ELECTR] Type of system in which output frequency is made to vary at a mechanical rate over a desired frequency band. { 'frē·kwən·sē ˌskan·iŋ }

frequency-selective device See electric filter. { 'frē·kwən·sē siˌlek·tiv diˌvīs }

frequency separation multiplier [ELECTR] Multiplier in which each of the variables is split into a low-frequency part and a high-frequency part that are multiplied separately, and the results added to give the required product; this system makes it possible to get high accuracy and broad bandwidth. { 'frē·kwən·sē ˌsep·ə,rā·shən 'məl·təˌplī·ər }

frequency separator [ELECTR] The circuit that separates the horizontal and vertical synchronizing pulses in an analog monochrome or color television receiver. { 'frē·kwən·sē ˌsep·ə ˌrād·ər }

frequency shift [ELECTR] A change in the frequency of a radio transmitter or oscillator. Also known as radio-frequency shift. { 'frē·kwən·sē ˌshift }

frequency-shift converter [ELECTR] A device that converts a received frequency-shift signal to an amplitude-modulated signal or a direct-current signal. { 'frē·kwən·sē ˌshift kən 'vərd·ər }

frequency-shift keyer [ELECTR] A lever to effect a frequency shift, that is, a change in the frequency of a radio transmitter, oscillator, or receiver. { 'frē·kwən·sē ˌshift 'kē·ər }

frequency-shift keying [COMMUN] A form of frequency modulation used especially in telegraph, data, and facsimile transmission, in which the modulating wave shifts the output frequency between predetermined values corresponding to the frequencies of correlated sources. Abbreviated FSK. Also known as frequency-shift modulation; frequency-shift transmission. { 'frē·kwən·sē ˌshift 'kē·iŋ }

frequency-shift modulation See frequency-shift keying. { 'frē·kwən·sē ˌshift ˌmäj·ə'lā·shən }

frequency-shift transmission See frequency-shift keying. { 'frē·kwən·sē ˌshift tranz'mish·ən }

frequency-slope modulation [COMMUN] Type of modulation in which the carrier signal is swept periodically over the entire width of the band, much as in chirp radar; modulation of the carrier with a voice or other communication signal changes the bandwidth of the system without affecting the uniform distribution of energy over the band. { 'frē·kwən·sē ˌslōp ˌmäj·ə'lā·shən }

frequency spectrum [SYS ENG] In the analysis of a random function of time, such as the amplitude of noise in a system, the limit as T approaches infinity of $1/(2\pi T)$ times the ensemble average of the squared magnitude of the amplitude of the Fourier transform of the function from $-T$ to T. Also known as power-density spectrum; power spectrum; spectral density. { 'frē·kwən·sē ˌspek·trəm }

frequency splitting [ELECTR] One condition of operation of a magnetron which causes rapid alternating from one mode of operation to another; this results in a similar rapid change in oscillatory frequency and consequent loss in power at the desired frequency. { 'frē·kwən·sē ˌsplid·iŋ }

frequency stability [ELECTR] The ability of an oscillator to maintain a desired frequency; usually expressed as percent deviation from the assigned frequency value. { 'frē·kwən·sē stəˌbil·əd·ē }

frequency stabilization [COMMUN] Process of controlling the center or carrier frequency so that it differs from that of a reference source by not more than a prescribed amount. { 'frē·kwən·sē ˌstā·bə·lə'zā·shən }

frequency standard [ELECTR] A stable oscillator, usually controlled by a crystal or tuning fork, that is used primarily for frequency calibration. { 'frē·kwən·sē ˌstan·dərd }

frequency swing [COMMUN] **1.** Peak difference between the maximum and the minimum values of the instantaneous frequency. **2.** In frequency modulation, a term used to describe the change in frequency resulting from the modulation. { 'frē·kwən·sē ˌswiŋ }

frequency synthesizer [ELECTR] A device that provides a choice of a large number of different frequencies by combining frequencies selected from groups of independent crystals, frequency dividers, and frequency multipliers. { ˌfrē·kwən·sē 'sin·thəˌsīz·ər }

frequency telemetering [COMMUN] The transmittal of an alternating-current signal from a

primary element by variations in the signal frequency, instead of amplitude. { ¦frē·kwən·sē ¦tel·ə¦mēd·ə·riŋ }

frequency-time-intensity [ELECTR] Type of radar display in which the frequency, time, and strobe intensity are correlated. { ¦frē·kwən·sē ¦tīm in'ten·səd·ē }

frequency tolerance [ELECTR] Of a radio transmitter, extent to which the carrier frequency of the transmitter may be permitted to depart from the frequency assigned. { 'frē·kwən·sē ˌtäl·ə·rəns }

frequency-to-voltage converter [ELECTR] A converter that provides an analog output voltage which is proportional to the frequency or repetition rate of the input signal derived from a flowmeter, tachometer, or other alternating-current generating device. Abbreviated F/V converter. { ¦frē·kwən·sē tə ¦vōl·tij kən'vərd·ər }

frequency transformation [CONT SYS] A transformation used in synthesizing a band-pass network from a low-pass prototype, in which the frequency variable of the transfer function is replaced by a function of the frequency. Also known as low-pass band-pass transformation. { ¦frē·kwən·sē ˌtranz·fər'mā·shən }

frequency translation [COMMUN] Moving a modulated radio-frequency carrier signal to a new location in the frequency spectrum. { ¦frē·kwən·sē tranz'lā·shən }

frequency translator See frequency converter. { ¦frē·kwən·sē 'tranzˌlād·ər }

frequency-type telemeter [ELECTR] Telemeter that employs frequency of an alternating current or voltage as the translating means. { 'frē·kwən·sē ˌtīp 'telˌəˌmēd·ər }

frequency variation [ELECTR] The change over time of the deviation from assigned frequency of a radio-frequency carrier (or power supply system), usually tightly controlled because of national or industry standards. { ¦frē·kwən·sē ˌver·ē¦ā·shən }

Frequently Asked Questions [COMPUT SCI] Abbreviated FAQ. **1.** A document containing answers to common questions about the subjects of other documents to which it is linked. **2.** In particular, a document associated with a Web site that contains answers to common questions about the site. { ˌfrē·kwənt·lē ˌaskt 'kwes·chənz }

Fresnel region [ELECTROMAG] The region between the near field of an antenna (close to the antenna compared to a wavelength) and the Fraunhofer region. { frā'nel ˌrē·jən }

Fresnel spotlight [ELEC] A lighting instrument that is composed of a lamp and a Fresnel (stepped planoconvex) lens; the unit can be made with or without reflectors and has a system to adjust the spacing between the lamp and the lens so as to control the light beam; models range from 100 to 5000 watts. { frā'nel 'spätˌlīt }

Fresnel zones [ELECTROMAG] Circular portions of a wavefront transverse to a line between an emitter and a point where the disturbance is being observed, the nth zone includes all paths whose lengths are between $n - 1$ and n half-wavelengths longer than the line-of-sight path. Also known as half-period zones. { frā'nel ˌzōnz }

frictional electricity [ELEC] The electric charges produced on two different objects, such as silk and glass or catskin and ebonite, by rubbing them together. Also known as triboelectricity. { 'frik·shən·əl iˌlek'tri·səd·ē }

friction bonding [ENG] Soldering of a semiconductor chip to a substrate by vibrating the chip back and forth under pressure to create friction that breaks up oxide layers and helps alloy the mating terminals. { 'frik·shən ˌbänd·iŋ }

friction-feed printer [COMPUT SCI] A computer printer in which a roller is used to hold and advance the paper, much as in an ordinary typewriter. { 'frik·shən ¦fēd ˌprint·ər }

fringe area [COMMUN] An area just beyond the limits of the reliable service area of a television or radio transmitter, in which signals are weak and the reception is erratic. { 'frinj ˌer·ē·ə }

fringe howl [ENG ACOUS] Squeal or howl heard when some circuit in a receiver is on the verge of oscillation. { 'frinj ˌhaùl }

fringing fields [ELECTR] The electric fields produced by scattered electrons in an electron microscope. { 'frinj·iŋ ˌfēlz }

frit seal [ENG] A seal made by fusing together metallic powders with a glass binder, for such applications as hermetically sealing ceramic packages for integrated circuits. { 'frit ˌsēl }

frogging repeater [ELECTR] Carrier repeater having provisions for frequency frogging to permit use of a single multipair voice cable without having excessive crosstalk. { ¦frägˌiŋ riˌpēd·ər }

from-to tester [ENG] Test equipment which checks continuity or impedance between points. { ¦frəm ˌtü ˌtest·ər }

front-end [COMPUT SCI] Of a computer, under programmed instructions, performing data transfers and control operations to relieve a larger computer of these routines. { ¦frənt 'end }

front-end edit [COMPUT SCI] The process of checking and correcting data at the time it is entered into a computer system. { 'frənt ¦end 'ed·it }

front-end processor [COMPUT SCI] A computer which connects to the main computer at one end and communications channels at the other, and which directs the transmitting and receiving of messages, detects and corrects transmission errors, assembles and disassembles messages, and performs other processing functions so that the main computer receives pure information. { ¦frənt ¦end ˌpräs,es·ər }

front porch [COMMUN] Portion of a composite picture signal which lies between the leading edge of the horizontal blanking pulse and the leading edge of the corresponding synchronizing pulse. { ¦frənt 'pȯrch }

front-to-back ratio [ELECTROMAG] Ratio of the effectiveness of a directional antenna, loudspeaker, or microphone toward the front and toward the rear. { ¦frənt tə ¦bak 'rā·shō }

fruit [ELECTR] Undesired signals received by a secondary radar from transponders responding

to other radars. [NAV] Radar-beacon-system video display of a synchronous beacon return which results when several interrogator stations are located within the same general area; each interrogator receives its own interrogated reply as well as many synchronous replies resulting from interrogation of the airborne transponders by other ground stations. { früt }

frying noise [ELEC] Noise in telephone transmission even when no conversation is taking place; caused by signal current flowing across a resistance element having multiple intermittent paths. Also known as transmitter noise. { 'frī·iŋ ˌnȯiz }

F-scan *See* F-display. { 'efˌskan }

F-scope *See* F-display. { 'efˌskōp }

FSK *See* frequency-shift keying.

FSS *See* fixed-satellite service.

FTAM *See* file transfer access and management. { 'efˌtam }

FTP *See* file transfer protocol.

full adder [ELECTR] A logic element which operates on two binary digits and a carry digit from a preceding stage, producing as output a sum digit and a new carry digit. Also known as three-input adder. { ˌfůl 'ad·ər }

full duplex [COMMUN] Data channel able to operate in both directions simultaneously. [COMPUT SCI] The complete duplication of any data-processing facility. { ˌfůl 'düˌpleks }

full-duplex operation [COMMUN] Simultaneous communications in both directions between two points. { ˌfůl ˌdüˌpleks ˌäp·əˈrā·shən }

full-featured software [COMPUT SCI] Software with the most advanced available functionality. { ˌfůl ˌfē·chərd 'sȯftˌwer }

full load [ELEC] The greatest load that a circuit or piece of equipment is designed to carry under specified conditions. { ˌfůl 'lōd }

full-load current [ELEC] The greatest current that a circuit or piece of equipment is designed to carry under specified conditions. { ˌfůl ˌlōd 'kə·rənt }

full-motion video adapter [COMPUT SCI] A video adapter capable of displaying moving video images from a video cassette recorder, laser disk player, or camcorder on a computer screen. { ˌfůl ˌmō·shən 'vid·ē·ōˌdap·tər }

full-pitch winding [ELEC] An armature winding in which the distance between two active conductors of a coil equals the pole pitch. { 'fůl ˌpich ˌwīnd·iŋ }

full-range fuse [ELEC] A high-voltage, current-limiting fuse that can safely interrupt any value of the fault current that causes the fuse elements (conductors) to melt. { ˌfůl ˌrānj 'fyüz }

full-screen editor [COMPUT SCI] A computer program that allows the user to work with the computer in an interactive manner by using all or most of the area of a cathode-ray tube or similar electronic display. { 'fůl ˌskrēn 'ed·əd·ər }

full section filter [ELECTR] A filter network whose graphical representation has the shape of the Greek letter pi, connoting capacitance in the upright legs and inductance or reactance in the horizontal member. { 'fůl ˌsek·shən 'fil·tər }

full subtracter [ELECTR] A logic element which operates on three binary input signals representing a minuend, subtrahend, and borrow digit, producing as output a different digit and a new borrow digit. Also known as three-input subtracter. { ˌfůl səb'trak·tər }

full-wave amplifier [ELECTR] An amplifier without any clipping. { 'fůl ˌwāv 'am·pləˌfī·ər }

full-wave bridge [ELECTR] A circuit having a bridge with four diodes, which provides full-wave rectification and gives twice as much direct-current output voltage for a given alternating-current input voltage as a conventional full-wave rectifier. { 'fůl ˌwāv 'brij }

full-wave control [ELECTR] Phase control that acts on both halves of each alternating-current cycle, for varying load power over the full range from 0 to the full-wave maximum value. { 'fůl ˌwāv kən'trōl }

full-wave rectification [ELECTR] Rectification in which output current flows in the same direction during both half cycles of the alternating input voltage. { 'fůl ˌwāv ˌrek·tə·fə'kā·shən }

full-wave rectifier [ELECTR] A double-element rectifier that provides full-wave rectification; one element functions during positive half cycles and the other during negative half cycles. { 'fůl ˌwāv 'rek·təˌfī·ər }

full-wave vibrator [ELEC] A vibrator having an armature that moves back and forth between two fixed contacts so as to change the direction of direct-current flow through a transformer at regular intervals and thereby permit voltage stepup by the transformer; used in battery-operated power supplies for mobile and marine radio equipment. { 'fůl ˌwāv 'vīˌbrād·ər }

full-word boundary [COMPUT SCI] In the IBM 360 system, any address which ends in 00, and is therefore a natural boundary for a four-byte machine word. { 'fůl ˌwərd 'baůn·drē }

fully populated board [COMPUT SCI] A printed circuit board on which no room remains to install additional chips or other electronic components that would provide additional capabilities. { 'fůl·ē ˌpäp·yəˌlād·əd 'bȯrd }

function [COMPUT SCI] In FORTRAN, a subroutine of a particular kind which returns a computational value whenever it is called. [MATH] A mathematical rule between two sets that assigns to each member of the first, exactly one member of the second. { 'fəŋk·shən }

functional [COMPUT SCI] In a linear programming problem involving a set of variables x_j, $j = 1, 2, \ldots, n$, a function of the form $c_1x_1 + c_2x_2 + \cdots + c_nx_n$ (where the c_j are constants) which one wishes

to optimize (maximize or minimize, depending on the problem) subject to a set of restrictions. { 'fəŋk·shən·əl }

functional analysis [SYS ENG] A part of the design process that addresses the activities that a system, software, or organization must perform to achieve its desired outputs, that is, the transformations necessary to turn available inputs into the desired outputs. { |'fəŋk·shən·əl ə'nal·ə·səs }

functional analysis diagram [SYS ENG] A representation of functional analysis and, in particular, the transformations necessary to turn available inputs into the desired outputs, the flow of data or items between functions, the processing instructions that are available to guide the transformation, and the control logic that dictates the activation and termination of functions. { |fəŋk·shən·əl ə'nal·ə·səs ,dī·ə,gram }

functional application [COMPUT SCI] A program or computer system, particularly a real-time system, that deals with the primary, ongoing operations of a business enterprise. { 'fəŋk·shən·əl ,ap·lə'kā·shən }

functional decomposition [CONT SYS] The partitioning of a large-scale control system into a nested set of generic control functions, namely the regulatory or direct control function, the optimizing control function, the adaptive control function, and the self-organizing function. { 'fəŋk·shən·əl dē,käm·pə'zish·ən }

functional design [COMPUT SCI] A level of the design process in which subtasks are specified and the relationships among them defined, so that the total collection of subsystems performs the entire task of the system. [SYS ENG] The aspect of system design concerned with the system's objectives and functions, rather than its specific components. { 'fəŋk·shən·əl di'zīn }

functional diagram [COMPUT SCI] A diagram that indicates the functions of the principal parts of a total system and also shows the important relationships and interactions among these parts. { 'fəŋk·shən·əl 'dī·ə,gram }

functional error recovery [COMPUT SCI] A procedure whereby the operating system intervenes in certain common errors and attempts actions to allow execution of the computer program to continue. { 'fəŋk·shən·əl 'er·ər ri,kəv·ə·rē }

functional failure [COMPUT SCI] Failure of a computer system to generate the correct results for a set of inputs. { ,fəŋk·shən·əl 'fāl·yər }

functional generator *See* function generator. { 'fəŋk·shən·əl 'jen·ə,rād·ər }

functional interleaving [COMPUT SCI] Alternating the parts of a number of sequences in a cyclic fashion, such as a number of accesses to memory followed by an access to a data channel. { |fəŋk·shən·əl 'in·tər,lēv·iŋ }

functional multiplier *See* function multiplier. { |fəŋk·shən·əl |məl·tə,plī·ər }

functional programming [COMPUT SCI] A type of computer programming in which functions are used to control the processing of logic. { 'fəŋk·shən·əl 'prō,gram·iŋ }

functional requirement [COMPUT SCI] The documentation which accompanies a program and states in detail what is to be performed by the system. { |fəŋk·shən·əl ri'kwīr·mənt }

functional specifications [COMPUT SCI] The documentation for the design of an information system, including the data base; the human and machine procedures; and the inputs, outputs, and processes for each data entry, query, update, and report program in the system. { |fəŋk·shən·əl ,spes·ə·fə'kā·shənz }

functional switching circuit [ELECTR] One of a relatively small number of types of circuits which implements a Boolean function and constitutes a basic building block of a switching system; examples are the AND, OR, NOT, NAND, and NOR circuits. { |fəŋk·shən·əl 'swich·iŋ ,sər·kət }

functional unit [COMPUT SCI] The part of the computer required to perform an elementary process such as an addition or a pulse generation. { |fəŋk·shən·əl 'yü·nət }

function code [COMPUT SCI] Special code which appears on a medium such as a paper tape and which controls machine functions such as a carriage return. { 'fəŋk·shən ,kōd }

function-evaluation routine [COMPUT SCI] A canned routine such as a log function or a sine function. { |fəŋk·shən i,val·yə'wā·shən rü,tēn }

function generator Also known as functional generator. [ELECTR] **1.** An analog computer device that indicates the value of a given function as the independent variable is increased. **2.** A signal generator that delivers a choice of a number of different waveforms, with provisions for varying the frequency over a wide range. { 'fəŋk·shən ,jen·ə,rād·ər }

function key [COMPUT SCI] A special key on a keyboard to control a mechanical function, initiate a specific computer operation, or transmit a signal that would otherwise require multiple key strokes. { 'fəŋk·shən ,kē }

function multiplier [ELECTR] An analog computer device that takes in the changing values of two functions and puts out the changing value of their product as the independent variable is changed. Also known as functional multiplier. { 'fəŋk·shən |məl·tə,plī·ər }

function switch [ELECTR] A network having a number of inputs and outputs so connected that input signals expressed in a certain code will produce output signals that are a function of the input information but in a different code. { 'fəŋk·shən ,swich }

function table [COMPUT SCI] **1.** Sets of computer information arranged so an entry in one set selects one or more entries in the other sets. **2.** A computer device that converts multiple inputs into a single output or encodes a single input into multiple outputs. { 'fəŋk·shən ,tā·bəl }

function unit [COMPUT SCI] In computer systems, a device which can store a functional relationship and release it continuously or in increments. { 'fəŋk·shən ,yü·nət }

functor *See* logic element. { 'fəŋk·tər }

fundamental group [COMMUN] In wire communications, a group of trunks that connect each local or trunk switching center to a trunk switching center of higher rank on which it homes; the term also applies to groups that interconnect zone centers. { ¦fən·də¦ment·əl 'grüp }

fundamental mode [ELECTROMAG] The waveguide mode having the lowest critical frequency. Also known as dominant mode; principal mode. { ¦fən·də¦ment·əl 'mōd }

Funkel effect [ELECTR] Fluctuations in the current from an oxide cathode, or any cathode that does not consist of pure metal, due to fluctuations in the work function resulting from changes with time in the cathode surface. { 'fəŋ·kəl i ˌfekt }

fuse [ELEC] An expendable device for opening an electric circuit when the current therein becomes excessive, containing a section of conductor which melts when the current through it exceeds a rated value for a definite period of time. Also known as electric fuse. { fyüz }

fuse alarm [ELEC] Circuit that produces a visual or audible signal to indicate a blown fuse. { 'fyüz əˌlärm }

fuse block [ELEC] An insulating base on which are mounted fuse clips or other contacts for fuses. Also known as fuseboard. { 'fyüz ˌbläk }

fuseboard *See* fuse block. { 'fyüzˌbōrd }

fuse box *See* cutout box. { 'fyüz ˌbäks }

fuse clip [ELEC] A spring contact used to hold and make connection to a cartridge-type fuse. { 'fyüz ˌklip }

fuse cutout [ELEC] Assembly of a fuse support and a fuse holder which may or may not include the fuse link. { ¦fyüz 'kəˌdau̇t }

fused-electrolyte battery *See* thermal battery. { ¦fyüzd i'lek·trəˌlīt ˌbad·ə·rē }

fuse diode [ELECTR] A diode that opens under specified current surge conditions. { 'fyüz ˌdī ˌōd }

fuse disconnecting switch [ELEC] Disconnecting switch in which a fuse unit forms a part of the blade. { ¦fyüz dis·kə'nek·tiŋ ˌswich }

fused junction *See* alloy junction. { ¦füzd 'jəŋk·shən }

fused-junction diode *See* alloy-junction diode. { ¦fyüzd ¦jəŋk·shən 'dīˌōd }

fused-junction transistor *See* alloy-junction transistor. { ¦fyüzd ¦jəŋk·shən tran'zis·tər }

fused semiconductor [ELECTR] Junction formed by recrystallization on a base crystal from a liquid phase of one or more components and the semiconductor. { ¦fyüzd 'sem·i·kənˌdək·tər }

fuse link [ELEC] Part of a fuse that carries the current of the circuit and all or part of which melts when the current exceeds a predetermined value. { 'fyüz ˌliŋk }

fuse PROM [COMPUT SCI] A programmable read-only memory in which the programming is carried out either by blowing open microscopic fuse links to define a logic one or zero for each cell in the memory array, or by causing metal to short out base-emitter transistor junctions to program the ones or zeros into the memory. { 'fyüz ˌprām }

fuse wire [ELEC] Wire made from an alloy that melts at a relatively low temperature and overheats to this temperature when carrying a particular value of overload current. { 'fyüz ˌwīr }

fusible resistor [ELEC] A resistor designed to protect a circuit against overload, its resistance limits current flow and thereby protects against surges when power is first applied to a circuit; its fuse characteristic opens the circuit when current drain exceeds design limits. { ¦fyü·zə·bəl ri'zis·tər }

future address patch [COMPUT SCI] A computer output containing the address of a symbol and the address of the last reference to that symbol. { ¦fyü·chər a'dres ˌpach }

future label [COMPUT SCI] An address referenced in the operand field of an instruction, but which has not been previously defined. { 'fyü·chər ˌlā·bəl }

fuze *See* fuse. { fyüz }

fuzzy [MATH] Property of objects or processes that are not amenable to precise definition or precise measurement. { ¦fəz·ē }

fuzzy algorithm [COMPUT SCI] An ordered set of instructions, comprising fuzzy assignment statements, fuzzy conditional statements, and fuzzy unconditional action statements, that, upon execution, yield an approximate solution to a specified problem. { ¦fəz·ē 'al·gəˌrith·əm }

fuzzy assignment statement [COMPUT SCI] An instruction in a fuzzy algorithm that assigns a possibly fuzzy value to a variable. { ¦fəz·ē ə'sīn·mənt ˌstāt·mənt }

fuzzy conditional statement [COMPUT SCI] An instruction in a fuzzy algorithm that assigns a possibly fuzzy value to a variable or causes an action to be executed, provided that a fuzzy condition holds. { ¦fəz·ē kən'dish·ən·əl ˌstāt·mənt }

fuzzy controller [CONT SYS] An automatic controller in which the relation between the state variables of the process under control and the action variables, whose values are computed from observations of the state variables, is given as a set of fuzzy implications or as a fuzzy relation. { ¦fəz·ē kən'trōl·ər }

fuzzy logic [MATH] The logic of approximate reasoning, bearing the same relation to approximate reasoning that two-valued logic does to precise reasoning. { ¦fəz·ē 'läj·ik }

fuzzy mathematics [MATH] A methodology for systematically handling concepts that embody imprecision and vagueness. { ¦fəz·ē ˌmath·ə'mad·iks }

fuzzy model [MATH] A finite set of fuzzy relations that form an algorithm for determining the outputs of a process from some finite number of past inputs and outputs. { ¦fəz·ē 'mäd·əl }

fuzzy relation [MATH] A fuzzy subset of the cartesian product $X \times Y$, denoted as a relation from a set X to a set Y. { ¦fəz·ē ri'lā·shən }

fuzzy relational equation [MATH] An equation of the form $A \cdot R = B$, where A and B are fuzzy sets, R is a fuzzy relation, and $A \cdot R$ stands for the composition of A with R. { ¦fəz·ē ri¦lā·shən·əl i'kwā·zhən }

fuzzy set [MATH] An extension of the concept of a set, in which the characteristic function which determines membership of an object in the set is not limited to the two values 1 (for membership in the set) and 0 (for nonmembership), but can take on any value between 0 and 1 as well. { 'fəz·ē 'set }

fuzzy system [SYS ENG] A process that is too complex to be modeled by using conventional mathematical methods, and that gives rise to data that are, in general, soft, with no precise boundaries; examples are large-scale engineering complex systems, social systems, economic systems, management systems, medical diagnostic processes, and human perception. { ¦fəz·ē 'sis·təm }

fuzzy unconditional action statement [COMPUT SCI] An instruction in a fuzzy algorithm that specifies a possibly fuzzy mathematical operation or an action to be executed. { ¦fəz·ē ən·kən ¦dish·ən·əl 'ak·shən ˌstāt·mənt }

fV *See* femtovolt.

F/V converter *See* frequency-to-voltage converter. { ¦ef¦vē kən'vərd·ər }

G

G *See* conductance.

GaAs FET *See* gallium arsenide field-effect transistor. { 'gas,fet }

gain The increase in signal power that is produced by an amplifier; usually given as the ratio of output to input voltage, current, or power, expressed in decibels. Also known as transmission gain. |ELECTROMAG| *See* antenna gain. { gān }

gain asymptotes |CONT SYS| Asymptotes to a logarithmic graph of gain as a function of frequency. { 'gān 'as·əm,tōts }

gain-bandwidth product |ELECTR| The midband gain of an amplifier stage multiplied by the bandwidth in megacycles. { ¦gān ¦band,width ,präd·əkt }

gain control |ELECTR| A device for adjusting the gain of a system or component. { 'gān kən,trōl }

gain-crossover frequency |CONT SYS| The frequency at which the magnitude of the loop ratio is unity. { ¦gān ¦krós,ō·vər ,frē·kwən·sē }

gain margin |CONT SYS| The reciprocal of the magnitude of the loop ratio at the phase crossover frequency, frequently expressed in decibels. { 'gān ,mär·jən }

gain reduction |ELECTR| Diminution of the output of an amplifier, usually achieved by reducing the drive from feed lines by use of equalizer pads or reducing amplification by a volume control. { 'gān ri,dək·shən }

gain scheduling |CONT SYS| A method of eliminating influences of variations in the process dynamics of a control system by changing the parameters of the regulator as functions of auxiliary variables which correlate well with those dynamics. { 'gān ,skej·ə·liŋ }

gain sensitivity control *See* differential gain control. { ¦gān ,sen·sə'tiv·əd·ē kən,trōl }

gain turndown |ELEC| A receiver gain control incorporated in a transponder to protect the transmitter from overload. { ¦gān 'tərn,daůn }

gallium arsenide field-effect transistor |ELECTR| A field-effect transistor in which current between the ohmic source and drain contacts is carried by free electrons in a channel consisting of *n*-type gallium arsenide, and this current is modulated by a Schottky-barrier rectifying contact called the gate that varies the cross-sectional area of the channel. Abbreviated GaAs FET. { 'gal·ē·əm 'ärs·ən,īd 'fēld i¦fekt tran'zis·tər }

galvanic |ELEC| Pertaining to electricity flowing as a result of chemical action. { gal'van·ik }

galvanic battery |ELEC| A galvanic cell, or two or more such cells electrically connected to produce energy. { gal'van·ik 'bad·ə·rē }

galvanic cell |ELEC| An electrolytic cell that is capable of producing electric energy by electrochemical action. { gal'van·ik 'sel }

galvanic couple |ELEC| A pair of unlike substances, such as metals, which generate a voltage when brought in contact with an electrolyte. { gal'van·ik 'kəp·əl }

galvanic current |ELEC| A steady direct current. { gal'van·ik 'kə·rənt }

galvanometer |ENG| An instrument for indicating or measuring a small electric current by means of a mechanical motion derived from electromagnetic or electrodynamic forces produced by the current. { ,gal·və'näm·əd·ər }

galvanometer constant |ELEC| Number by which a certain function of the reading of a galvanometer must be multiplied to obtain the current value in ordinary units. { ,gal·və'näm·əd·ər 'kän·stənt }

galvanometer recorder |ENG ACOUS| A sound recorder in which the audio signal voltage is applied to a coil suspended in a magnetic field; the resulting movements of the coil cause a tiny attached mirror to move a reflected light beam back and forth across a slit in front of a moving photographic film. { ,gal·və'näm·əd·ər ri'kȯrd·ər }

galvanometer shunt |ELEC| Resistor connected in parallel with a galvanometer to increase its range under certain conditions; it allows only a known fraction of the current to pass through the galvanometer. { ,gal·və'näm·əd·ər ,shənt }

galvanostat |ELEC| A device to deliver constant current from a high-voltage battery. { gal'van·ə ,stat }

game theory |MATH| The mathematical study of games or abstract models of conflict situations from the viewpoint of determining an optimal policy or strategy. Also known as theory of games. { 'gām ,thē·ə·rē }

game tree |MATH| A tree graph used in the analysis of strategies for a game, in which the vertices of the graph represent positions in the game, and a given vertex has as its successors

all vertices that can be reached in one move from the given position. Also known as lookahead tree. { 'gām ,trē }

gang [ELEC] A mechanical connection of two or more circuit devices so that they can be varied at the same time. { gaŋ }

gang capacitor [ELEC] A combination of two or more variable capacitors mounted on a common shaft to permit adjustment by a single control. { ¦gaŋ kə'pas·əd·ər }

ganged control [ELECTR] Controls of two or more circuits mounted on a common shaft to permit simultaneous control of the circuits by turning a single knob. { ¦gaŋd kən'trōl }

gang switch [ELEC] A combination of two or more switches mounted on a common shaft to permit operation by a single control. Also known as deck switch. { 'gaŋ ,swich }

gantry-type robot [CONT SYS] A continuous-path, Cartesian-coordinate robot constructed in a bridge shape that uses rails to move along a single horizontal axis or along either of two perpendicular horizontal axes. { 'gan·trē¦tīp 'rō ,bät }

gap [COMMUN] A region not adequately covered by the main lobes of a radar antenna, or in a larger area, not well covered by the fields of view of the radars of a network. [COMPUT SCI] A uniformly magnetized area in a magnetic storage device (tape, disk), used to indicate the end of an area containing information. [ELEC] The spacing between two electric contacts. { gap }

gap coding [COMMUN] A process for conveying information by inserting gaps or periods of non-transmission in a system that normally transmits continuously. { 'gap ,kōd·iŋ }

gap digit [COMPUT SCI] A digit in a machine word that does not represent data or instructions, such as a parity bit or a digit included for engineering purposes. { 'gap ,dij·it }

gap factor [ELECTR] Ratio of the maximum energy gained in volts to the maximum gap voltage in a tube employing electron accelerating gaps, that is, a traveling-wave tube. { 'gap ,fak·tər }

gap-filler radar [ENG] Radar used to fill gaps in radar coverage of other radar. { 'gap ,fil·ər 'rā ,där }

gapless tape [COMPUT SCI] A magnetic tape upon which raw data is recorded in a continuous manner; the data are streamed onto the tape without the word gaps; the data still may contain signs and end-of-record marks in the gapless form. { ¦gap·ləs 'tāp }

gapped tape [COMPUT SCI] A magnetic tape upon which blocked data has been recorded; it contains all of the flag bits and format to be read directly into a computer for immediate use. { ¦gapt 'tāp }

gap scatter [COMPUT SCI] The deviation from the exact distance required between read/write heads and the magnetized surface. { 'gap ,skad·ər }

garbage *See* hash. { 'gär·bij }

garbage collection [COMPUT SCI] In a computer program with dynamic storage allocation, the automatic process of identifying those memory cells whose contents are no longer useful for the computation in progress and then making them available for some other use. { 'gär·bij kə ,lek·shən }

garbage in, garbage out [COMPUT SCI] A phrase often stressed during introductory courses in computer utilization as a reminder that, regardless of the correctness of the logic built into the program, no answer can be valid if the input is erroneous. Abbreviated GIGO. { ¦gär·bij 'in ¦gär·bij 'au̇t }

garble [COMMUN] To alter a message intentionally or unintentionally so that it is difficult to understand. { 'gär·bəl }

garbling [ELECTR] Confusion resulting from a secondary radar receiving overlapping coded responses from transponders in a dense target environment. { 'gär·blig }

garnet maser [ELECTR] A name incorrectly applied to a ferromagnetic amplifier. { 'gär·nət 'mā·zər }

gas-activated battery [ELEC] A reserve battery which is activated by introducing a gas which reacts with a material between the electrodes of the battery to form an electrolyte. { ¦gas ak·tə ¦vād·əd 'bad·ə·rē }

gas-bubble protective device *See* Buchholz protective device. { 'gas ,bəb·əl prə'tek·tiv di,vīs }

gas capacitor [ELEC] A capacitor consisting of two or more electrodes separated by a gas, other than air, that serves as a dielectric. { ¦gas kə'pas·əd·ər }

gas cell [ELEC] Cell in which the action depends on the absorption of gases by the electrodes. { 'gas ,sel }

gas current [ELECTR] A positive-ion current produced by collisions between electrons and residual gas molecules in an electron tube. Also known as ionization current. { 'gas ,kə·rənt }

gas discharge [ELECTR] Conduction of electricity in a gas, due to movements of ions produced by collisions between electrons and gas molecules. { ¦gas 'dis,chärj }

gas-discharge display [ELECTR] A display in which seven or more cathode elements form the segments of numerical or alphameric characters when energized by about 160 volts direct current; the segments are vacuum-sealed in a neon-mercury gas mixture. { ¦gas 'dis,chärj di,splā }

gas-discharge lamp *See* discharge lamp. { ¦gas 'dis,chärj ,lamp }

gas doping [ELECTR] The introduction of impurity atoms into a semiconductor material by epitaxial growth, by using streams of gas that are mixed before being fed into the reactor vessel. { 'gas ,dōp·iŋ }

GasFET [ENG] A gas sensor based on changes, upon exposure to hydrogen, in the surface part of the work function of a palladium component that serves as the gate contact of a metal oxide semiconductor field-effect transistor (MOSFET). { 'gas,fet }

gas-filled cable [ELEC] A coaxial or other cable containing gas under pressure to serve as

insulation and keep out moisture. { 'gas ,fild 'kā·bəl }

gas-filled diode [ELECTR] A gas tube which is a diode, such as a cold-cathode rectifier or phanotron. { 'gas ,fild 'dī,ōd }

gas-filled rectifier *See* cold-cathode rectifier. { 'gas ,fild 'rek·tə,fī·ər }

gas-filled triode [ELECTR] A gas tube which has a grid or other control element, such as a thyratron or ignitron. { 'gas ,fild 'trī,ōd }

gas focusing [ELECTR] A method of concentrating an electron beam by utilizing the residual gas in a tube; beam electrons ionize the gas molecules, forming a core of positive ions along the path of the beam which attracts beam electrons and thereby makes the beam more compact. Also known as ionic focusing. { 'gas ,fō·kəs·iŋ }

gas-insulated substation [ELEC] An electric power substation in which all live equipment and busbars are housed in grounded metal enclosures sealed and filled with sulfur hexafluoride gas. { 'gas ,in·sə,lād·əd 'səb,stā·shən }

gas ionization [ELECTR] Removal of the planetary electrons from the atoms of gas filling an electron tube, so that the resulting ions participate in current flow through the tube. { ¦gas ,ī·ə·nə'zā·shən }

gas magnification [ELECTR] Increase in current through a phototube due to ionization of the gas in the tube. { ¦gas ,mag·nə·fə'kā·shən }

gas phototube [ELECTR] A phototube into which a quantity of gas has been introduced after evacuation, usually to increase its sensitivity. { ¦gas 'fōd·ō,tüb }

gas scattering [ELECTR] The scattering of electrons or other particles in a beam by residual gas in the vacuum system. { 'gas ,skad·ə·riŋ }

gas-sensitive field-effect transistor [ELECTR] A field-effect transistor whose gate electrode is composed of a material, such as palladium, that is sensitive to a particular gas, such as hydrogen, so that the gain of the transistor depends on the concentration of this gas. { 'gas¦sen·səd·iv 'fēld i,fekt tran,zis·tər }

gassiness [ELECTR] Presence of unwanted gas in a vacuum tube, usually in relatively small amounts, caused by the leakage from outside or evolution from the inside walls or elements of the tube. { 'gas·ē·nəs }

gassing [ELEC] The evolution of gas in the form of small bubbles in a storage battery when charging continues after the battery has been completely charged. { 'gas·iŋ }

gassy tube [ELECTR] A vacuum tube that has not been fully evacuated or has lost part of its vacuum due to release of gas by the electrode structure during use, so that enough gas is present to impair operating characteristics appreciably. Also known as soft tube. { ¦gas·ē 'tüb }

gas tetrode *See* tetrode thyratron. { ¦gas 'te,trōd }

gas thermostatic switch [ELEC] A thermostatic switch in which heat causes the pressure of gas in a sealed metal bellows to increase, thereby moving the bellows and closing the contacts of a switch. { ¦gas 'thər·mə,stad·ik 'swich }

gas tube [ELECTR] An electron tube into which a small amount of gas or vapor is admitted after the tube has been evacuated; ionization of gas molecules during operation greatly increases current flow. { 'gas ,tüb }

gas vacuum breakdown [ELECTR] Ionization of residual gas in a vacuum, causing reverse conduction in an electron tube. { ¦gas ¦vak·yəm 'brāk ,daun }

gate [ELECTR] **1.** A circuit having an output and a multiplicity of inputs and so designed that the output is energized only when a certain combination of pulses is present at the inputs. **2.** A circuit in which one signal, generally a square wave, serves to switch another signal on and off. **3.** One of the electrodes in a field-effect transistor. **4.** To control the passage of a pulse or signal. **5.** In radar, an electric waveform which is applied to the control point of a circuit to alter the mode of operation of the circuit at the time when the waveform is applied. Also known as gating waveform. **6.** In radar, an electronic waveform applied to a circuit or a timing cue applied to logic to alter the operation of the circuit or logic at the appropriate time; generally used in anticipation of an input of particular interest. { gāt }

gate-array device [ELECTR] An integrated logic circuit that is manufactured by first fabricating a two-dimensional array of logic cells, each of which is equivalent to one or a few logic gates, and then adding final layers of metallization that determine the exact function of each cell and interconnect the cells to form a specific network when the customer orders the device. { 'gāt ə ,rā di,vīs }

gate-controlled rectifier [ELECTR] A three-terminal semiconductor device, such as a silicon controlled rectifier, in which the unidirectional current flow between the rectifier terminals is controlled by a signal applied to a third terminal called the gate. { 'gāt kən,trōld 'rek·tə,fī·ər }

gate-controlled switch [ELECTR] A semiconductor device that can be switched from its nonconducting or "off" state to its conducting or "on" state by applying a negative pulse to its gate terminal and that can be turned off at any time by applying reverse drive to the gate. Abbreviated GCS. { 'gāt kən,trōld 'swich }

gated-beam tube [ELECTR] A pentode electron tube having special electrodes that form a sheet-shaped beam of electrons; this beam may be deflected away from the anode by a relatively small voltage applied to a control electrode, thus giving extremely sharp cutoff of anode current. { ¦gād·əd ¦bēm ,tüb }

gated sweep [ELECTR] Sweep in which the duration as well as the starting time is controlled to exclude undesired echoes from the indicator screen. { ¦gād·əd 'swēp }

gate equivalent circuit [ELECTR] A unit of measure for specifying relative complexity of digital circuits, equal to the number of individual logic gates that would have to be interconnected to

perform the same function as the digital circuit under evaluation. { 'gāt i,kwiv-ə-lənt ,sər-kət }

gate generator [ELECTR] A circuit used to generate gate pulses; in one form it consists of a multivibrator having one stable and one unstable position. { 'gāt ,jen-ə-rād-ər }

gate multivibrator [ELECTR] Rectangular-wave generator designed to produce a single positive or negative gate voltage when triggered and then to become inactive until the next trigger pulse. { 'gāt ,məl-ti'vī,brād-ər }

gate pulse [ELECTR] A pulse that triggers a gate circuit so it will pass a signal. { 'gāt ,pəls }

gate turnoff [ELECTR] A *pnpn* switching device comparable to a silicon-controlled rectifier, but having a more complex gate structure that permits easy and fast turnoff as well as turn-on from its gate input terminal, at frequencies up to 100 kilohertz. { ¦gāt ¦tər,nȯf }

gate-turnoff silicon controlled rectifier [ELECTR] A silicon controlled rectifier that can be turned off by applying a current to its gate; used largely for direct-current switching, because turnoff can be achieved in a fraction of a microsecond. { ¦gāt ¦tər,nȯf 'sil-ə-kən kən,trōld 'rek-tə,fī-ər }

gateway [COMMUN] A point of entry and exit to another system, such as the connection point between a local-area network and an external-communications network. { 'gāt,wā }

gate winding [ELECTR] A winding used in a magnetic amplifier to produce on-off action of load current. { 'gāt ,wīnd-iŋ }

gather write [COMPUT SCI] An operation that creates a single output record from data items gathered from nonconsecutive locations in main memory. { ¦gath-ər 'wrīt }

gating [ELECTR] The process of selecting those portions of a wave that exist during one or more selected time intervals or that have magnitudes between selected limits. { 'gād-iŋ }

gating waveform *See* gate. { ¦gād-iŋ 'wāv,fȯrm }

Gaussian beam [ELECTROMAG] A beam of electromagnetic radiation whose wave front is approximately spherical at any point along the beam and whose transverse field intensity over any wave front is a Gaussian function of the distance from the axis of the beam. { 'gaú-sē-ən 'bēm }

Gaussian noise [COMMUN] Random electromagnetic signals inherent in nature, both in the surroundings of a receiver and produced in the receiver itself, typically produced by the thermal agitation of molecular structures, and having Gaussian statistics in its components. Also known as thermal noise. { ¦gaú-sē-ən 'nȯiz }

Gaussian noise generator [ELECTR] A signal generator that produces a random noise signal whose frequency components have a Gaussian distribution centered on a predetermined frequency value. { ¦gaú-sē-ən 'nȯiz ,jen-ə,rād-ər }

Gauss' law of flux [ELEC] The law that the total electric flux which passes out from a closed surface equals (in rationalized units) the total charge within the surface. { 'gaús ,lȯ əv 'fləks }

gc *See* gigahertz.

GCS *See* gate-controlled switch.

G-display [ELECTR] A radar display format in which the target of a tracking radar appears as a spot, as in an F-display, with "wings" (horizontal extensions of the plot) that increase in length as the range decreases. Also known as G-indicator; G-scan; G-scope. { 'jē di,splā }

gearbox *See* transmission. { 'gir,bäks }

Geissler tube [ELECTR] An experimental discharge tube with two electrodes at opposite ends, used to demonstrate and study the luminous effects of electric discharges through various gases at low pressures. { 'gīs-lər ,tüb }

gelled cell [ELEC] A lead-acid cell with a nonspillable gelled electrolyte for portable use. { ¦jeld ¦sel }

gemmho [ELEC] A unit of conductance, equal to 10^{-6} mho, being the conductance of a substance which has a resistance of 10^{6} ohms. { 'je,mō }

gen [COMPUT SCI] To install an operating system or a systems software package for a particular configuration of computer equipment. Abbreviation for generate. { jen }

gender [ELEC] The classification of a connector as female or male. { 'jen-dər }

gender changer [ELEC] A small passive device that is placed between two connectors of the same gender to enable them to be joined. Also known as cable matcher. { 'jen-dər ,chān-jər }

general address [COMMUN] Group of characters included in the heading of a message that causes the message to be routed to all addresses included in the general address category. { ¦jen-rəl ə'dres }

generalized routine [COMPUT SCI] A routine which can process a wide variety of jobs; for example, a generalized sort routine which will sort in ascending or descending order on any number of fields whether alphabetic or numeric, or both, and whether binary coded decimals or pure binaries. { 'jen-rə,līzd rü'tēn }

generalized system [COMPUT SCI] A computer system developed for a broad range of users. { 'jen-rə,līzd 'sis-təm }

general program [COMPUT SCI] A computer program designed to solve a specific type of problem when values of appropriate parameters are supplied. { ¦jen-rəl 'prō-grəm }

general-purpose automatic test system [ELECTR] Modular, computer-type, automatic electronic checkout system capable of finding faults in electronic equipment at the system, subsystem, line replaceable unit, module, and piece part levels. { ¦jen-rəl ¦pər-pəs ,ȯd-ə,mad-ik 'test ,sis-təm }

general-purpose computer [COMPUT SCI] A device that manipulates data without detailed, step-by step control by human hand and is

designed to be used for many different types of problems. { ¦jen·rəl ¦pər·pəs kəm'pyüd·ər }

general-purpose function generator [COMPUT SCI] A function generator which can be adjusted to generate many different functions, rather than being designed for a particular function. Also known as arbitrary function generator. { ¦jen·rəl ¦pər·pəs 'fəŋk·shən ˌjen·əˌrād·ər }

general-purpose language [COMPUT SCI] A computer programming language whose use is not restricted to a particular type of computer or a specialized application. { 'jen·rəl ¦pər·pəs 'laŋ·gwij }

general-purpose systems simulation *See* GPSS. { 'jen·rəl ¦pər·pəs 'sis·təmz ˌsim·yəˌlā·shən }

general register *See* local register. { ¦jen·rəl 'rej·ə·stər }

general routine [COMPUT SCI] In computers, a routine, or program, applicable to a class of problems; it provides instructions for solving a specific problem when appropriate parameters are supplied. { ¦jen·rəl rü'tēn }

generate [COMPUT SCI] **1.** To create a particular program by selecting parts of a general-program skeleton (or outline) and specializing these parts into a cohesive entity. **2.** *See* gen. { 'jen·əˌrāt }

generate and test [COMPUT SCI] A computer problem-solving method in which a sequence of candidate solutions is generated, and each is tested to determine if it is an appropriate solution. { 'jen·əˌrāt ən 'test }

generated address [COMPUT SCI] An address calculated or determined by instructions contained in a computer program for subsequent use by that program. Also known as calculated address; synthetic address. { ¦jen·əˌrād·əd ə'dres }

generating area *See* fetch. { 'jen·əˌrād·iŋ ˌer·ē·ə }

generating magnetometer [ENG] A magnetometer in which a coil is rotated in the magnetic field to be measured with the resulting generated voltage being proportional to the strength of the magnetic field. { 'jen·əˌrād·iŋ mag·nə'täm·əd·ər }

generating routine *See* generator. { 'jen·əˌrād·iŋ rüˌtēn }

generation [COMPUT SCI] **1.** Any one of three groups used to historically classify computers according to their electronic hardware components, logical organization and software, or programming techniques; computers are thus known as first-, second-, or third-generation; a particular computer may possess characteristics of all generations simultaneously. **2.** One of a family of data sets, related to one another in that each is a modification of the next most recent data set. { ˌjen·ə'rā·shən }

generation data group [COMPUT SCI] A collection of files, each a modification of the previous one, with the newest numbered 0, the next −1, and so forth, and organized so that each time a new file is added the oldest is deleted. Abbreviated GDG. { ˌjen·ə'rā·shən 'dad·ə ˌgrüp }

generation number [COMPUT SCI] A number contained in the file label of a reel of magnetic tape that indicates the generation of the data set of the tape. { ˌjen·ə'rā·shən ˌnəm·bər }

generation rate [ELECTR] In a semiconductor, the time rate of creation of electron-hole pairs. { ˌjen·ə'rā·shən ˌrāt }

generative grammar [COMPUT SCI] A set of rules that describes the valid expressions in a formal language on the basis of a set of the parts of speech (formally called the set of metavariables or phrase names) and the alphabet or character set of the language. { 'jen·rəd·iv 'gram·ər }

generator [COMPUT SCI] A program that produces specific programs as directed by input parameters. Also known as generating routine. [ELEC] A machine that converts mechanical energy into electrical energy; in its commonest form, a large number of conductors are mounted on an armature that is rotated in a magnetic field produced by field coils. Also known as dynamo; electric generator. [ELECTR] **1.** A vacuum-tube oscillator or any other nonrotating device that generates an alternating voltage at a desired frequency when energized with direct-current power or low-frequency alternating-current power. **2.** A circuit that generates a desired repetitive or nonrepetitive waveform, such as a pulse generator. { 'jen·əˌrād·ər }

generator field control [ELEC] Method of regulating the output voltage of a generator by controlling the voltage which excites the field of the generator. { 'jen·əˌrād·ər 'fēld kənˌtrōl }

generator lock [ELECTR] Circuitry that synchronizes two video signals so that they can be mixed. Abbreviated genlock. { 'jen·əˌrād·ər ˌläk }

generator reactor [ELEC] A small inductor connected between power-plant generators and the rest of an electric power system in order to limit and localize the effects of voltage transients. { 'jen·əˌrād·ər rēˌak·tər }

generator resistance [ELEC] The resistance of the current source in a network; usually much smaller than the load but taken into account in some network calculations. { 'jen·əˌrād·ər ri ˌzis·təns }

genetic algorithm [COMPUT SCI] A search procedure based on the mechanics of natural selection and genetics. Also known as evolutionary strategy. { jəˌned·ik 'al·gəˌrith·əm }

genetic programming *See* evolutionary programming. { jəˌned·ik 'prōˌgram·iŋ }

genlock *See* generator lock. { 'genˌläk }

geomagnetic noise [COMMUN] Interference in radio communications arising from terrestrial magnetism. { ¦jē·ō·mag¦ned·ik 'nȯiz }

geometrical distortion [COMPUT SCI] A discrepancy between the horizontal and vertical dimensions of the picture elements on an electronic display, causing, for example, circles to appear as ovals unless corrected for in software. { ¦jē·ə ¦me·trə·kəl di'stȯr·shən }

geometric programming [SYS ENG] A nonlinear programming technique in which the relative contribution of each of the component costs is first determined; only then are the variables in

the component costs determined. { ¦jē·ə¦me·trik 'prō ˌgram·iŋ }

geophone [ELECTR] A transducer, used in seismic work, that responds to motion of the ground at a location on or below the surface of the earth. { 'jē·əˌfōn }

germanium diode [ELECTR] A semiconductor diode that uses a germanium crystal pellet as the rectifying element. Also known as germanium rectifier. { jər'mān·ē·əm 'dīˌōd }

germanium rectifier *See* germanium diode. { jər'mān·ē·əm 'rek·təˌfī·ər }

germanium transistor [ELECTR] A transistor in which the semiconductor material is germanium, to which electric contacts are made. { jər'mān·ē·əm tran'zis·tər }

get [COMPUT SCI] An instruction in a computer program to read data from a file. { get }

getmain [COMPUT SCI] An instruction used in some programming languages to request dynamic allocation of additional storage space to the program. { 'getˌmān }

getter sputtering [ELECTR] The deposition of high-purity thin films at ordinary vacuum levels by using a getter to remove contaminants remaining in the vacuum. { 'gad·ər ˌspad·ə·riŋ }

ghost [COMPUT SCI] To display a menu option in a dimmed, fuzzy typeface to indicate that this option is no longer available. [ELECTR] In radar, a contact generated where in fact no target exists, resulting from measurement ambiguity or attempts to resolve ambiguities with multiple observations in a multiple-target situation. { gōst }

ghost algebraic manipulation language [COMPUT SCI] An algebraic manipulation language which externally gives the appearance of manipulating quite general mathematical expressions, although internally it is functioning with canonically represented data, much like the simpler seminumerical languages. { ¦gōst al·jə'brā·ik məˌnip·yə'lā·shən ˌlaŋ·gwij }

ghost image [ELECTR] An undesired duplicate image offset from the desired image on a video display device. { 'gōst ˌim·ij }

ghost mode [ELECTROMAG] Waveguide mode having a trapped field associated with an imperfection in the wall of the waveguide; a ghost mode can cause trouble in a waveguide operating close to the cutoff frequency of a propagation mode. { 'gōst ˌmōd }

ghost pulse [ELECTR] An unwanted signal appearing on the screen of a radar indicator and caused by echoes which have a basic repetition frequency differing from that of the desired signals. Also known as ghost image; ghost signal. { 'gōst ˌpəls }

ghost signal [ELECTR] The reflection-path signal that produces a ghost image on an analog television receiver. Also known as echo. { 'gōst ˌsig·nəl }

GHz *See* gigahertz.

gibberish *See* hash. { 'jib·rish }

GIF *See* graphics interchange format. { gif }

gigabit [COMMUN] One billion bits, or 1,000,000,000 bits. { 'gig·əˌbit }

gigacycle *See* gigahertz. { 'gig·əˌsī·kəl }

gigaflops [COMPUT SCI] A unit of computer speed, equal to 10^9 flops. { 'gig·əˌfläps }

gigahertz [COMMUN] Unit of frequency equal to 10^9 hertz. Abbreviated GHz. Also known as gigacycle (gc); kilomegacycle; kilomegahertz. { 'gig·əˌharts }

gigawatt [ELEC] One billion watts, or 10^9 watts. Abbreviated GW. { 'gig·əˌwät }

GIGO *See* garbage in, garbage out. { 'gīˌgō }

gigohm [ELEC] One thousand megohms, or 10^9 ohms. { 'gigˌōm }

Gilbert circuit [ELECTR] A circuit that compensates for nonlinearities and instabilities in a monolithic variable-transconductance circuit by using the logarithmic properties of diodes and transistors. { 'gil·bərt ˌsər·kət }

Gilbert-Varshamov bound [COMPUT SCI] In the theory of quantum computation, a sufficient condition for an algorithm that encodes N logical qubits into N' carrier qubits (with N' larger than N) to correct any error on any M carrier qubits; namely, that N/N' be smaller than

$$1 - 2|-\chi \log_{2\chi} -(1-\chi)\log_2(1-\chi)|,$$

where $\chi = 2M/N'$. { ¦gil·bərt ˌvär¦sha·məv ¦baůnd }

gimmick [ELEC] Length of twisted two-conductor cable, used as a variable capacitive load, in which the capacitance is varied by untwisting and separating the individual conductors. { 'gim·ik }

G-indicator *See* G-display. { 'jē ˌin·dəˌkād·ər }

GKS *See* graphical kernel system.

glare [COMMUN] The interference that arises when an attempt is made to place a telephone call just as an incoming call is arriving; in the case of data transmission under the control of a computer, this can render the line or even the computer temporarily inoperative. { gler }

glare filter [ENG] A screen that is placed over the face of a cathode-ray tube to reduce glare from ambient and overhead light. { 'glerˌfil·tər }

glass capacitor [ELEC] A capacitor whose dielectric material is glass. { ¦glas kə'pas·əd·ər }

glassivation [ELECTR] Method of transistor passivation by a pyrolytic glass-deposition technique, whereby silicon semiconductor devices, complete with metal contact systems, are fully encapsulated in glass. { ˌglas·ə'vā·shən }

glass-plate capacitor [ELEC] High-voltage capacitor in which the metal plates are separated by sheets of glass serving as the dielectric, with the complete assembly generally immersed in oil. { 'glas ˌplāt kə'pas·əd·ər }

glass resistor [ELEC] A glass tube with a helical carbon resistance element painted on it. { ¦glas ri'zis·tər }

glass switch [ELECTR] An amorphous solid-state device used to control the flow of electric current. Also known as ovonic device. { ¦glas 'swich }

glass-to-metal seal [ELECTR] An airtight seal between glass and metal parts of an electron tube, made by fusing together a special glass

and special metal alloy having nearly the same temperature coefficients of expansion. { ¦glas tə ¦med·əl 'sēl }

glint [ELECTR] **1.** Pulse-to-pulse variation in the apparent angular center of a target, due to target scattering complexity and dynamics; causes angle errors in tracking radars using either conical scan or monopulse techniques. **2.** The use of this effect to degrade tracking or seeking functions of an enemy weapons system. { glint }

glitch [ELECTR] **1.** An undesired transient voltage spike occurring on a signal being processed. **2.** A minor technical problem arising in electronic equipment. { glich }

global format [COMPUT SCI] A choice of label alignment or numeric format in a spreadsheet program that applies to all the cells of the spreadsheet. { ¦glō·bəl 'fȯr,mat }

global memory [COMPUT SCI] Computer storage that can be used by a number of processors connected together in a multiprocessor system. { ¦glō·bəl 'mem·rē }

global orbiting navigation satellite system *See* GLONASS. { ¦glō·bəl ¦ȯrb·əd·iŋ ˌnav·ə¦gā·shən 'sad·əˌlīt ˌsis·təm }

Global Positioning System [NAV] A positioning or navigation system designed to use 24 satellites, each carrying atomic clocks, to provide a receiver anywhere on earth with extremely accurate measurements of its three-dimensional position, velocity, and time. Abbreviated GPS. { 'glō·bəl pə'zish·niŋ ˌsis·təm }

global resource sharing [COMPUT SCI] The ability of all of the users of a local-area network to share any of the resources (storage devices, input/output devices, and so forth) connected to the network. { 'glō·bəl ri'sȯrs ˌsher·iŋ }

global search and replace [COMPUT SCI] A text-editing function of a word-processing system in which text is scanned for a given combination of characters, and each such combination is replaced by another set of characters. { ¦glō·bəl ¦sərch ən ri'plās }

global system for mobile communications *See* GSM. { ¦glō·bəl ¦sis·təm fər ˌmō·bəl kəˌmyü·nə'kā·shənz }

global variable [COMPUT SCI] A variable which can be accessed (used or changed) throughout a computer program and is not confined to a single block. { ¦glō·bəl 'ver·ē·ə·bəl }

Globar lamp [ELEC] A lamp whose illuminating element is a silicon carbide rod which gives off blackbody radiation when heated. { 'glōˌbär ˌlamp }

GLONASS [NAV] A worldwide Russian navigation system designed to use 24 satellites in three uniformly spaced orbital planes to provide three-dimensional position and velocity data to equipped users on or above the earth's surface. Acronym for global orbiting navigation satellite system. { 'glōˌnas }

glossary [COMPUT SCI] A file of commonly used phrases that can be retrieved in a word-processing program, usually through use of a command and a keyword. { 'gläs·ə·rē }

glow discharge [ELECTR] A discharge of electricity through gas at relatively low pressure in an electron tube, characterized by several regions of diffuse, luminous glow and a voltage drop in the vicinity of the cathode that is much higher than the ionization voltage of the gas. Also known as cold-cathode discharge. { ¦glō ¦disˌchärj }

glow-discharge cold-cathode tube *See* glow-discharge tube. { ¦glō ¦disˌchärj ¦kōld 'kathˌōd ˌtüb }

glow-discharge microphone [ENG ACOUS] Microphone in which the action of sound waves on the current forming a glow discharge between two electrodes causes corresponding variations in the current. { ¦glō ¦disˌchärj 'mī·krəˌfōn }

glow-discharge tube [ELECTR] A gas tube that depends for its operation on the properties of a glow discharge. Also known as glow-discharge cold-cathode tube; glow tube. { ¦glō ¦disˌchärj ˌtüb }

glow-discharge voltage regulator [ELECTR] Gas tube that varies in resistance, depending on the value of the applied voltage; used for voltage regulation. { ¦glō ¦disˌchärj 'vōl·tij ˌreg·yəˌlād·ər }

glow lamp [ELECTR] A two-electrode electron tube containing a small quantity of an inert gas, in which light is produced by a negative glow close to the negative electrode when voltage is applied between the electrodes. { 'glō ˌlamp }

glow potential [ELECTR] The potential across a glow discharge, which is greater than the ionization potential and less than the sparking potential, and is relatively constant as the current is varied across an appreciable range. { 'glō pə ˌten·chəl }

glow tube *See* glow-discharge tube. { 'glō ˌtüb }

glow-tube oscillator [ELECTR] A circuit using a glow-discharge tube which functions as a simple relaxation oscillator, generating a fixed-amplitude periodic sawtooth waveform. { 'glō ¦tüb 'äs·əˌlād·ər }

GNU [COMPUT SCI] Freely distributed software for producing and distributing nonproprietary software that is compatible with Unix, but is not Unix. { gə'nü }

gobo [ENG] A panel used to shield a television camera lens from direct light. [ENG ACOUS] A sound-absorbing shield used with a microphone to block unwanted sounds. { 'gōˌbō }

Golay code [COMMUN] A linear, block-based error-correcting code that is particularly suited to applications where short code word length and low latency are important. { gə'lā ˌkōd }

gold doping [ELECTR] A technique for controlling the lifetime of minority carriers in a transistor; gold is diffused into the base and collector regions to reduce storage time in transistor circuits. { 'gōl ˌdōp·iŋ }

golden-section search [COMPUT SCI] A dichotomizing search in which, in each step, the remaining items are divided as closely as possible according to the golden section. { 'gōl·dən 'sek·shən ˌsərch }

gold-leaf electroscope [ELEC] An electroscope in which two narrow strips of gold foil or leaf

suspended in a glass jar spread apart when charged; the angle between the strips is related to the charge. { 'gōld ˌlēf i'lek·trəˌskōp }

goovoo [COMPUT SCI] A file within a generation data group, so called because of the notation used in some systems in which, for example, G003 V001 is volume 1, generation −3 of a generation data group. { 'gü,vü }

GOP *See* group of pictures.

Gopher [COMPUT SCI] A menu-based program for browsing the Internet and finding and gaining access to files, programs, definitions, and other Internet resources. { 'gō·fər }

GOTO-less programming [COMPUT SCI] The writing of computer programs without the use of GOTO statements. { ¦gō·tü¦les 'prōˌgram·iŋ }

Goto pair [ELECTR] Two tunnel diodes connected in series in such a way that when one is in the forward conduction region, the other is in the reverse tunneling region; used in high-speed gate circuits. { 'gō·dō ˌper }

GOTO statement [COMPUT SCI] A statement in a computer program that provides for the direct transfer of control to another statement with the identifier that is the argument of the GOTO statement. { 'gōˌtü ˌstāt·mənt }

government frequency bands [COMMUN] Radio-frequency bands which are allotted to various departments and services of the federal government. { 'gəv·ər·mənt ˌfre·kwən·se ˌbanz }

g parameter [ELECTR] One of a set of four transistor equivalent-circuit parameters; they are the inverse of the *h* parameters. { 'jē pəˌram·əd·ər }

GPS *See* Global Positioning System.

GPSS [COMPUT SCI] A problem-oriented programming language designed to assist the user in developing models. Acronym for general-purpose systems simulation.

graceful degradation [COMPUT SCI] A programming technique to prevent catastrophic system failure by allowing the machine to operate, though in a degraded mode, despite failure or malfunction of several integral units or subsystems. { 'grās·fùl ˌdeg·rə'dā·shən }

graceful exit [COMPUT SCI] The ability to escape from a problem situation in a computer program without having to reboot the computer. { ¦grās·fəl 'eg·zət }

grade [COMMUN] One of two types of television service, designated grade A and grade B, each having a specified signal strength, that of grade A being several timeshigher than B. { grād }

graded-junction transistor *See* rate-grown transistor. { ¦grād·əd ¦jəŋk·shən tran'zis·tər }

graded periodicity technique [ELECTR] A technique for modifying the response of a surface acoustic wave filter by varying the spacing between successive electrodes of the interdigital transducer. { ¦grād·əd ˌpir·ē·ə'dis·əd·ē tek ˌnēk }

grain direction [COMPUT SCI] In character recognition, the arrangement of paper fibers in relation to a document's travel through a character reader. { 'grān dəˌrek·shən }

grandfather [COMPUT SCI] A data set that is two generations earlier than the data set under consideration. { 'granˌfath·ər }

grandfather cycle [COMPUT SCI] The period during which records are kept but not used except to reconstruct other records which are accidentally lost. { 'granˌfath·ər ˌsī·kəl }

granularity [SYS ENG] The degree to which a system can be broken down into separate components, making it customizable and flexible. { ˌgran·yə'lar·əd·ē }

graphechon [ELECTR] A storage tube having two electron guns, one for writing and the other for reading and simultaneous erasing, on opposite sides of the storage medium, which consists of an insulator or semiconductor deposited on a thin substratum of metal supported by a fine mesh. { 'graf·əˌkän }

graphical design [ELECTR] Methods of obtaining operating data for an electron tube or semiconductor circuit by using graphs which plot the relationship between two variables, such as plate voltage and grid voltage, while another variable, such as plate current, is held constant. { ¦graf·ə·kəl di'zīn }

graphical kernel system [COMPUT SCI] A standard system and language for creating two- and three-dimensional master graphics images on many types of display devices. Abbreviated GKS. { ¦graf·i·kəl 'kər·nəl ˌsis·təm }

graphical symbol [ELEC] A true symbol, rather than a coarse picture, representing an element in an electrical diagram. { ¦graf·ə·kəl 'sim·bəl }

graphical user interface [COMPUT SCI] A user interface in which program features are represented by icons that the user can access and manipulate with a pointing device. Abbreviated GUI. { ¦graf·ə·kəl ˌyü·zər 'in·tərˌfās }

graphical visual display device [COMPUT SCI] A computer input-output device which enables the user to manipulate graphic material in a visible two-way, real-time communication with the computer, and which consists of a light pen, keyboard, or other data entry devices, and a visual display unit monitored by a controller. Also known as graphoscope. { ¦graf·ə·kəl ¦vizh·ə·wəl di'spla diˌvīs }

graphic display [ELECTR] The display of data in graphical form on the screen of a cathode-ray tube. { ¦graf·ik di'splā }

graphic equalizer [ENG ACOUS] A device that allows the response of audio equipment to be modified independently in several frequency bands through the use of a bank of slide controls whose positions form a graph of the frequency response. { ¦graf·ik 'ē·kwəˌlī·zər }

graphic panel [CONT SYS] A master control panel which indicates the status of equipment and operations in a system, and their relationships. { ¦graf·ik 'pan·əl }

graphics driver [COMPUT SCI] A series of instructions that activates a graphics device, such as a display screen or plotter. { 'graf·iks ˌdrīv·ər }

graphics engine [COMPUT SCI] A specialized processor that carries out graphics processing independently of the main central processing unit. Also known as graphics processor. { 'graf·iks ¦en·jən }

graphics interchange format [COMPUT SCI] Common file format for compressed graphic images on the World Wide Web that is limited to 256 colors. Abbreviated GIF. { ¦graf·iks 'in·tər,chānj ¦fȯr,mat }

graphics interface [COMPUT SCI] A user interface that displays icons to represent objects. { 'graf·iks ¦in·tər,fās }

graphics primitive [COMPUT SCI] A basic building block for graphic images, such as a dot, line, or curve. { 'graf·iks ¦prim·əd·iv }

graphics processor *See* graphics engine. { 'graf·iks ¦prä·ses·ər }

graphics program [COMPUT SCI] A program for the generation of images, ranging in complexity from simple line drawings to realistically shaded pictures that resemble photographs. { 'graf·iks ,prō·grəm }

graphics tablet [COMPUT SCI] A padlike peripheral device which is designed so that shapes appear on the monitor's screen when the tablet is drawn upon with a pointed device. { 'graf·iks ,tab·lət }

graphics terminal [COMPUT SCI] An input/output device that can accept and display picture images. { 'graf·iks ¦tər·mən·əl }

graphite anode [ELECTR] **1.** The rod of graphite which is inserted into the mercury-pool cathode of an ignitron to start current flow. **2.** The collector of electrons in a beam power tube or other high-current tube. { 'gra,fīt 'an,ōd }

graphite resistor [ELEC] A resistor made of carbon for resistance heating. { 'gra,fīt ri'zis·tər }

graphoscope *See* graphical visual display device. { 'graf·ə,skōp }

graph theory [MATH] **1.** The mathematical study of the structure of graphs and networks. **2.** The body of techniques used in graphing functions in the plane. { 'graf ,thē·ə·rē }

grass [ELECTR] Clutter due to circuit noise in a radar receiver, seen on an A scope as a pattern resembling a cross section of turf. Also known as hash. { gras }

grasshopper fuse [ELEC] Small fuse incorporating a spring which, upon release by the fusing wire, connects an auxiliary circuit to operate an alarm. { 'gras,häp·ər ,fyüz }

Grassot fluxmeter [ENG] A type of fluxmeter in which a light coil of wire is suspended in a magnetic field in such a way that it can rotate; the ends of the suspended coil are connected to a search coil of known area penetrated by the magnetic flux to be measured; the flux is determined from the rotation of the suspended coil when the search coil is moved. { ,grä,sō 'fläks,mēd·ər }

Gratz rectifier [ELECTR] Three-phase, full-wave rectifying circuit using six rectifiers connected in a bridge circuit. { 'grats ,rek·tə,fī·ər }

grav *See* G. { grav }

Gray code [COMMUN] A modified binary code in which sequential numbers are represented by expressions that differ only in one bit, to minimize errors. Also known as reflective binary code. { 'grā ,kōd }

greeking [COMPUT SCI] The display of the format of a document without displaying the characters. { 'grēk·iŋ }

grid [COMPUT SCI] In optical character recognition, a system of two groups of parallel lines, perpendicular to each other, used to measure or specify character images. [ELEC] A metal plate with holes or ridges, used in a storage cell or battery as a conductor and a support for the active material. [ELECTR] An electrode located between the cathode and anode of an electron tube, which has one or more openings through which electrons or ions can pass, and serves to control the flow of electrons from cathode to anode. { grid }

grid-anode transconductance *See* transconductance. { 'grid ¦an,ōd ,tranz·kən'dək·təns }

grid battery *See* C battery. { 'grid ,bad·ə·rē }

grid bias [ELECTR] The direct-current voltage applied between the control grid and cathode of an electron tube to establish the desired operating point. Also known as bias; C bias; direct grid bias. { 'grid ,bī·əs }

grid-bias cell *See* bias cell. { 'grid ,bī·əs ,sel }

grid blocking [ELECTR] **1.** Method of keying a circuit by applying negative grid bias several times cutoff value to the grid of a tube during key-up conditions; when the key is down, the blocking bias is removed and normal current flows through the keyed circuit. **2.** Blocking of capacitance-coupled stages in an amplifier caused by the accumulation of charge on the coupling capacitors due to grid current passed during the reception of excessive signals. { 'grid ,bläk·iŋ }

grid blocking capacitor *See* grid capacitor. { 'grid ¦bläk·iŋ kə,pas·əd·ər }

grid cap [ELECTR] A top-cap terminal for the control grid of an electron tube. { 'grid ,kap }

grid capacitor [ELECTR] A small capacitor used in the grid circuit of an electron tube to pass signal current while blocking the direct-current anode voltage of the preceding stage. Also known as grid blocking capacitor; grid condenser. { 'grid kə,pas·əd·ər }

grid-cathode capacitance [ELECTR] Capacitance between the grid and the cathode in a vacuum tube. { 'grid ¦kath,ōd kə,pas·əd·əns }

grid characteristic [ELECTR] Relationship of grid current to grid voltage of a vacuum tube. { 'grid ¦kar·ik·tə,ris·tik }

grid circuit [ELECTR] The circuit connected between the grid and cathode of an electron tube. { 'grid ,sər·kət }

grid condenser *See* grid capacitor. { 'grid kən ,den·sər }

grid conductance *See* electrode conductance. { 'grid kən'dək·təns }

grid control [ELECTR] Control of anode current of an electron tube by variation (control) of the control grid potential with respect to the cathode of the tube. { 'grid kən,trōl }

grid-controlled mercury-arc rectifier [ELECTR] A mercury-arc rectifier in which one or more electrodes are employed exclusively to control the starting of the discharge. Also known as grid-controlled rectifier. { 'grid kən,trōld 'mər·kyə·re ¦ärk 'rek·tə,fī·ər }

grid-controlled rectifier *See* grid-controlled mercury-arc rectifier. { 'grid kən,trōld 'rek·tə ,fī·ər }

grid control tube [ELECTR] Mercury-vapor-filled thermionic vacuum tube with an external grid control. { 'grid kən,trōl ,tüb }

grid current [ELECTR] Electron flow to a positive grid in an electron tube. { 'grid ,kə·rənt }

grid-dip meter [ELECTR] A multiple-range electron-tube oscillator incorporating a meter in the grid circuit to indicate grid current; the meter reading dips (reads lower grid current) when an external resonant circuit is tuned to the oscillator frequency. Also known as grid-dip oscillator. { 'grid ,dip ,mēd·ər }

grid-dip oscillator *See* grid-dip meter. { 'grid ,dip ¦äs·ə,lād·ər }

grid drive [ELECTR] A signal applied to the grid of a transmitting tube. { 'grid ,drīv }

grid driving power [ELECTR] Average product of the instantaneous value of the grid current and of the alternating component of the grid voltage over a complete cycle; this comprises the power supplied to the biasing device and to the grid. { 'grid ¦drīv·iŋ ,paù·ər }

grid element [ELEC] A sinuous resistor used to heat a furnace, made of heavy wire, strap, or casting and suspended from refractory or stainless supports built into the furnace walls, floor, and roof. { 'grid ,el·ə·mənt }

grid-glow tube [ELECTR] A glow-discharge tube in which one or more control electrodes initiate but do not limit the anode current except under certain operating conditions. { 'grid ¦glō ,tüb }

gridistor [ELECTR] Field-effect transistor which uses the principle of centripetal striction and has a multichannel structure, combining advantages of both field effect transistors and minority carrier injection transistors. { gri'dis·tər }

grid leak [ELECTR] A resistor used in the grid circuit of an electron tube to provide a discharge path for the grid capacitor and for charges built up on the control grid. { 'grid ,lēk }

grid-leak detector [ELECTR] A detector in which the desired audio-frequency voltage is developed across a grid leak and grid capacitor by the flow of modulated radio-frequency current; the circuit provides square-law detection on weak signals and linear detection on strong signals, along with amplification of the audio-frequency signal. { 'grid ,lēk di,tek·tər }

grid limiter [ELECTR] Limiter circuit which operates by limiting positive grid voltages by means of a large ohmic value resistor; as the exciting signal moves in a positive direction with respect to the cathode, current through the resistor causes an IR drop which holds the grid voltage essentially at cathode potential; during negative excursions no current flows in the grid circuit, so no voltage drop occurs across the resistor. { 'grid ,lim·əd·ər }

grid locking [ELECTR] Defect of tube operation in which the grid potential becomes continuously positive due to excessive grid emission. { 'grid ,läk·iŋ }

grid modulation [ELECTR] Modulation produced by feeding the modulating signal to the control-grid circuit of any electron tube in which the carrier is present. { 'grid ,mäj·ə'lā·shən }

grid neutralization [ELECTR] Method of amplifier neutralization in which a portion of the grid-cathode alternating-current voltage is shifted 180° and applied to the plate-cathode circuit through a neutralizing capacitor. { 'grid ,nü·trə·lə'zā·shən }

grid-plate capacitance [ELECTR] Direct capacitance between the grid and the plate in a vacuum tube. { 'grid ¦plāt kə'pas·əd·əns }

grid-plate transconductance *See* transconductance. { 'grid ¦plāt tranz·kən'dək·təns }

grid-pool tube [ELECTR] An electron tube having a mercury-pool cathode, one or more anodes, and a control electrode or grid that controls the start of current flow in each cycle; the excitron and ignitron are examples. { 'grid ¦pül ,tüb }

grid pulse modulation [ELECTR] Modulation produced in an amplifier or oscillator by applying one or more pulses to a grid circuit. { 'grid ¦pəls ,mäj·ə'lā·shən }

grid pulsing [ELECTR] Circuit arrangement of a radio-frequency oscillator in which the grid of the oscillator is biased so negatively that no oscillation takes place even when full plate voltage is applied; pulsing is accomplished by removing this negative bias through the application of a positive pulse on the grid. { 'grid ,pəls·iŋ }

grid resistor [ELECTR] A general term used to denote any resistor in the grid circuit. { 'grid ri,zis·tər }

grid return [ELECTR] External conducting path for the return grid current to the cathode. { 'grid ri ,tərn }

grid suppressor [ELECTR] Resistor of low ohmic value inserted in the grid circuit of a radio-frequency amplifier to prevent low-frequency parasitic oscillations. { 'grid sə,pres·ər }

grid swing [ELECTR] Total variation in grid-cathode voltage from the positive peak to the negative peak of the applied signal voltage. { 'grid ,swiŋ }

grid transformer [ELECTR] Transformer to supply an alternating voltage to a grid circuit or circuits. { 'grid tranz,fōr·mər }

grid-type level detector [ELECTR] A detector using a vacuum tube with input applied to a grid. { 'grid ,tip 'lev·əl di,tek·tər }

grid voltage [ELECTR] The voltage between a grid and the cathode of an electron tube. { 'grid ,vōl·tij }

Griebhard's rings [ELEC] A method of producing lines of constant color on a copper sheet,

coinciding with the equipotential lines of an electric field. { 'grēb·härts ,riŋz }

grinding [ELECTR] **1.** A mechanical operation performed on silicon substrates of semiconductors to provide a smooth surface for epitaxial deposition or diffusion of impurities. **2.** A mechanical operation performed on quartz crystals to alter their physical size and hence their resonant frequencies. { 'grīn·diŋ }

grip vector [CONT SYS] A vector from a point on the wrist socket of a robot to the point where the end effector grasps an object; describes the orientation of the object in space. { 'grip ,vek·tər }

groover [ENG] A tool for forming grooves in a slab of concrete not yet hardened. { 'grüv·ər }

Grosh's law [COMPUT SCI] The law that the processing power of a computer is proportional to the square of its cost. { 'grōsh·əz ,lȯ }

gross index [COMPUT SCI] The first of two indexes consulted to gain access to a record. { ¦grōs 'in ,deks }

gross information content [COMMUN] Measure of the total information, redundant or otherwise, contained in a message; expressed as the number of bits, nits, or Hartleys required to transmit the message with specified accuracy over a noiseless medium without coding. { ¦grōs ,in·fər'mā·shən ,kän·tent }

ground [ELEC] **1.** A conducting path, intentional or accidental, between an electric circuit or equipment and the earth, or some conducting body serving in place of the earth. Abbreviated gnd. Also known as earth (British usage); earth connection. **2.** To connect electrical equipment to the earth or to some conducting body which serves in place of the earth. { graùnd }

ground absorption [ELECTROMAG] Loss of energy in transmission of radio waves, due to dissipation in the ground. { 'graùnd əb,sȯrp·shən }

ground cable [ELEC] A heavy cable connected to earth for the purpose of grounding electric equipment. { 'graùnd ,kā·bəl }

ground circuit [ELEC] A telephone or telegraph circuit part of which passes through the ground. { 'graùnd ,sər·kət }

ground clutter [ELECTROMAG] Clutter on a ground or airborne radar due to reflection of signals from the ground or objects on the ground. Also known as ground flutter; ground return; land return; terrain echoes. { 'graùnd ,kləd·ər }

ground conductivity [ELEC] The effective conductivity of the ground, used in calculating the attenuation of radio waves. { 'graùnd ,kän·dək ¦tiv·əd·ē }

ground current *See* earth current. { 'graùnd ,kə·rənt }

ground detector [ELEC] An instrument or equipment used for indicating the presence of a ground on an ungrounded system. Also known as ground indicator. { 'graùnd di,tek·tər }

ground dielectric constant [ELEC] Dielectric constant of the earth at a given location. { 'graùnd di·ə¦lek·trik 'kän·stənt }

grounded-anode amplifier *See* cathode follower. { ¦graùnd·əd 'an,ōd ,am·plə,fī·ər }

grounded-base amplifier [ELECTR] An amplifier that uses a transistor in a grounded-base connection. { ¦graùnd·əd 'bās ,am·plə,fī·ər }

grounded-base connection [ELECTR] A transistor circuit in which the base electrode is common to both the input and output circuits; the base need not be directly connected to circuit ground. Also known as common-base connection. { ¦graùnd·əd 'bās kə,nek·shən }

grounded-cathode amplifier [ELECTR] Electron-tube amplifier with a cathode at ground potential at the operating frequency, with input applied between control grid and ground, and with the output load connected between plate and ground. { ¦graùnd·əd 'kath,ōd ,am·plə,fī·ər }

grounded-collector connection [ELECTR] A transistor circuit in which the collector electrode is common to both the input and output circuits; the collector need not be directly connected to circuit ground. Also known as common-collector connection. { ¦graùnd·əd kə'lek·tər kə ,nek·shən }

grounded-emitter amplifier [ELECTR] An amplifier that uses a transistor in a grounded-emitter connection. { ¦graùnd·əd i'mid·ər ,am·plə ,fī·ər }

grounded-emitter connection [ELECTR] A transistor circuit in which the emitter electrode is common to both the input and output circuits; the emitter need not be directly connected to circuit ground. Also known as common-emitter connection. { ¦graùnd·əd i'mid·ər kə,nek·shən }

grounded-gate amplifier [ELECTR] Amplifier that uses thin-film transistors in which the gate electrode is connected to ground; the input signal is fed to the source electrode and the output is obtained from the drain electrode. { ¦graùnd·əd 'gāt ,am·plə,fī·ər }

grounded-grid amplifier [ELECTR] An electron-tube amplifier circuit in which the control grid is at ground potential at the operating frequency; the input signal is applied between cathode and ground, and the output load is connected between anode and ground. { ¦graùnd·əd 'grid ,am·plə,fī·ər }

grounded-grid-triode circuit [ELECTR] Circuit in which the input signal is applied to the cathode and the output is taken from the plate; the grid is at radio-frequency ground and serves as a screen between the input and output circuits. { ¦graùnd·əd ¦grid ¦trī,ōd 'sər·kət }

grounded-grid-triode mixer [ELECTR] Triode in which the grid forms part of a grounded electrostatic screen between the anode and cathode, and is used as a mixer for centimeter wavelengths. { ¦graùnd·əd ¦grid ¦trī,ōd 'mik·sər }

grounded-plate amplifier *See* cathode follower. { ¦graùnd·əd 'plāt ,am·plə,fī·ər }

grounded system [ELEC] Any conducting apparatus connected to ground. Also known as earthed system. { ¦graùnd·əd 'sis·təm }

ground effect [COMMUN] The effect of ground conditions on radio communications. { 'graùnd i,fekt }

ground electrode [ELEC] A conductor buried in the ground, used to maintain conductors

connected to it at ground potential and dissipate current conducted to it into the earth, or to provide a return path for electric current in a direct-current power transmission system. Also known as earth electrode; grounding electrode. { 'graund i|lek,trōd }

ground equalizer inductors [ELECTROMAG] Coils, having relatively low inductance, inserted in the circuit to one or more of the grounding points of an antenna to distribute the current to the various points in any desired manner. { |graund 'ē·kwə,līz·ər in,dək·tərz }

ground fault [ELEC] Accidental grounding of a conductor. { 'graund ,fólt }

ground fault interrupter [ELEC] A fast-acting circuit breaker that also senses very small ground fault currents such as might flow through the body of a person standing on damp ground while touching a hot alternating-current line wire. { 'graund ,fólt ,int·ə,rəp·tər }

ground flutter *See* ground clutter. { 'graund ,fləd·ər }

ground indicator *See* ground detector. { 'graund ,in·də,kād·ər }

grounding [ELEC] Intentional electrical connection to a reference conducting plane, which may be earth, but which more generally consists of a specific array of interconnected electrical conductors referred to as the grounding conductor. { 'graund·iŋ }

grounding conductor [ELEC] An array of interconnected electric conductors at a uniform potential, to which electrical connections are made for the purpose of grounding. { 'graund·iŋ kən ,dək·tər }

grounding electrode *See* ground electrode. { 'graund·iŋ i,lek,trōd }

grounding plate [ELEC] An electrically grounded metal plate on which a person stands to discharge static electricity picked up by his body, or a similar plate buried in the ground to act as a ground rod. { 'graund·iŋ ,plāt }

grounding reactor [ELEC] A reactor sometimes used in a grounded alternating-current system which joins a conductor or neutral point to ground and serves to limit ground current in case of a fault. Also known as earthing reactor (British usage). { 'graund·iŋ rē,ak·tər }

grounding receptacle [ELEC] A receptacle which has an extra contact that accepts the third round or U-shaped prong of a grounding attachment plug and is connected internally to a supporting strap, providing a ground both through the outlet box and the grounding conductor, armor, or raceway of the wiring system. { 'graund·iŋ ri ,sep·tə·kəl }

grounding transformer [ELEC] Transformer intended primarily for the purpose of providing a neutral point for grounding purposes. { 'graund·iŋ tranz,fór·mər }

ground junction *See* grown junction. { 'graund ,jəŋk·shən }

ground loop [COMMUN] Return currents or magnetic fields from relatively high-powered circuits or components which generate unwanted noisy signals in the common return of relatively low-level signal circuits. { 'graund ,lüp }

ground lug [ELEC] A lug that connects a grounding conductor to a grounding electrode. { 'graund ,ləg }

ground noise [ENG ACOUS] The residual system noise in the absence of the signal in recording and reproducing; usually caused by inhomogeneity in the recording and reproducing media, but may also include tube noise and noise generated in resistive elements in the amplifier system. { 'graund ,nóiz }

ground outlet [ELEC] Outlet equipped with a receptacle of the polarity type having, in addition to the current-carrying contacts, one grounded contact which can be used for the connection of an equipment-grounding conductor. { 'graund ,aůt·let }

ground-penetrating radar *See* ground-probing radar. { |graund ,pen·ə|trād·iŋ 'rā,där }

ground plane [ELEC] A grounding plate, above-ground counterpoise, or arrangement of buried radial wires required with a ground-mounted antenna that depends on the earth as the return path for radiated radio-frequency energy. { 'graund ,plān }

ground-plane antenna [ELECTROMAG] Vertical antenna combined with a grounded horizontal disk, turnstile element, or similar ground-plane simulation; such antennas may be mounted several wavelengths above the ground, and provide a low radiation angle. { 'graund ,plān an'ten·ə }

ground plate [ELEC] A plate of conducting material embedded in the ground to act as a ground electrode. { 'graund ,plāt }

ground potential [ELEC] Zero potential with respect to the ground or earth. { 'graund pə,ten·chəl }

ground-probing radar [ENG] A nondestructive technique using electromagnetic waves to locate objects or interfaces buried beneath the earth's surface or located within a visually opaque structure. Also known as ground-penetrating radar; subsurface radar; surface-penetrating radar. { |graund |prōb·iŋ 'rā,där }

ground protection [ELEC] Protection provided a circuit by a device which opens the circuit when a fault to ground occurs. { 'graund prə,tek·shən }

ground recharge [ELEC] The flow of electrons from the ground, in reference to lightning effects. { 'graund |rē,chärj }

ground-reflected wave [ELECTROMAG] Component of the ground wave that is reflected from the ground. { 'graund ri|flek·təd 'wāv }

ground resistance [ELEC] Opposition of the earth to the flow of current through it; its value depends on the nature and moisture content of the soil, on the material, composition, and nature of connections to the earth, and on the electrolytic action present. { 'graund ri ,zis·təns }

ground return [ELEC] Use of the earth as the return path for a transmission line. [ELECTROMAG] **1.** An echo received from the ground by

an airborne radar set. **2.** *See* ground clutter. { 'graund ri,tarn }

ground-return circuit [ELEC] Circuit which has a conductor (or two or more in parallel) between two points and which is completed through the ground or earth. { 'graund ri,tarn ,sər·kət }

ground rod [ELEC] A rod that is driven into the earth to provide good grounding. { 'graund ,räd }

groundscatter propagation [COMMUN] Multihop ionospheric radio propagation along other than the great-circle path between transmitting and receiving stations; radiation from the transmitter is first reflected back to earth from the ionosphere, then scattered in many directions from the earth's surface. { 'graund ,skad·ər ,präp·ə'gā·shən }

ground system [ELECTROMAG] The portion of an antenna that is closely associated with an extensive conducting surface, which may be the earth itself. { 'graund ,sis·təm }

ground-up read-only memory [COMPUT SCI] A read-only memory which is designed from the bottom up, and for which all fabrication masks used in the multiple mask process are custom-generated. { 'graund ¦əp 'rēd ¦ōn·lē 'mem·rē }

ground wave [COMMUN] A radio wave that is propagated along the earth and is ordinarily affected by the presence of the ground and the troposphere; includes all components of a radio wave over the earth except ionospheric and tropospheric waves. Also known as surface wave. { 'graund ,wāv }

ground wire [ELEC] A conductor used to connect electric equipment to a ground rod or other grounded object. { 'graund ,wīr }

group [COMMUN] A communication transmission subdivision containing a number of voice channels, either within a supergroup or separately, normally comprised of up to 12 voice channels occupying the frequency band 60–108 kilohertz; each voice channel may be multiplexed for teletypewriter operation, if required. { grüp }

group A kits [ELECTR] Normally those items of electronic equipment which may be permanently or semipermanently installed in an aircraft for supporting, securing, or interconnecting the components and controls of the equipment, and which will not in any manner compromise the security classification of the equipment. { ¦grüp 'ā ,kits }

group B kits [ELECTR] Normally, the operating or operable component of the electronic equipment in an aircraft which, when installed on or in connection with group A parts, constitute the complete operable equipment. { ¦grüp 'bē ,kits }

group bus [ELEC] A scheme of electrical connections for a generating station in which more than two feeder lines are supplied by two bus-selector circuit breakers which lead to a main bus and an auxiliary bus. { 'grüp ¦bəs }

group busy tone [COMMUN] High tone connected to the jack sleeves of an outgoing trunk group as an indication that all trunks in the group are busy. { 'grüp ¦biz·ē ,tōn }

group code *See* systematic error-checking code. { 'grüp ,kōd }

group-coded record [COMPUT SCI] A method of recording data on magnetic tape with eight tracks of data and one parity track, in which every eighth byte in conjunction with the parity track is used for detection and correction of all single-bit errors. { 'grüp ,kōd·əd 'rek·ərd }

group communications software *See* groupware. { ,grüp kə,myü·nə,kā·shənz 'sòf,wer }

grouped-frequency operation [COMMUN] Use of different frequency bands for channels in opposite directions in a two-wire carrier system. { 'grüpt ¦frē·kwən·sē ,äp·ə,rā·shən }

grouped records [COMPUT SCI] Two or more records placed together and identified by a single key, to save storage space or reduce access time. { 'grüpt ¦rek·ərdz }

group-indicate [COMPUT SCI] To print indicative information from only the first record of a group. { 'grüp ¦in·də,kāt }

grouping [COMMUN] Periodic error in the spacing of recorded lines in a facsimile system. { 'grüp·iŋ }

grouping circuits [COMMUN] Circuits used to interconnect two or more switchboard positions together, so that one operator may handle the several switchboard positions from one operator's set. { 'grüp·iŋ ,sər·kəts }

grouping of records [COMPUT SCI] Placing records together in a group to either conserve storage space or reduce access time. { 'grüp·iŋ əv 'rek·ərdz }

group mark [COMPUT SCI] A character signaling the beginning or end of a group of data. { 'grüp ¦märk }

group modulation [COMMUN] Process by which a number of channels, already separately modulated to a specific frequency range, are again modulated to shift the group to another range. { 'grüp ,mäj·ə'lā·shən }

group of pictures [COMMUN] In MPEG-2, a group of pictures consists of one or more pictures in sequence. Abbreviated GOP. { 'grüp əv 'pik·chərz }

group printing [COMPUT SCI] The printing of information summarizing the data on a group of cards or other records when a key change occurs. { 'grüp ¦print·iŋ }

groupware [COMPUT SCI] Multiuser software that supports information sharing through digital media, such as electronic mail and messaging, electronic meeting systems and audio conferencing, group calendaring and scheduling, workflow process diagramming and analysis tools, and group document handling including group editing. { 'grüp,wer }

grove cell [ELEC] Primary cell, having a platinum electrode in an electrolyte of nitric acid within a porous cup, outside of which is a zinc electrode in an electrolyte of sulfuric acid; it normally operates on a closed circuit. { 'grōv ,sel }

Grover's algorithm [COMPUT SCI] An algorithm for finding an item in a database of 2N items, using a quantum computer, in a time of order $2^{N/2}$

steps instead of order 2^N steps. { ¦grō·vərz 'al·gə ˌrith·əm }

growler [ELEC] An electromagnetic device consisting essentially of two field poles arranged as in a motor, used for locating short-circuited coils in the armature of a generator or motor and for magnetizing or demagnetizing objects; a growling noise indicates a short-circuited coil. { 'graůl·ər }

grown-diffused transistor [ELECTR] A junction transistor in which the final junctions are formed by diffusion of impurities near a grown junction. { ¦grōn di¦fyüzd tran'zis·tər }

grown junction [ELECTR] A junction produced by changing the types and amounts of donor and acceptor impurities that are added during the growth of a semiconductor crystal from a melt. Also known as ground junction. { ¦grōn ¦jəŋk·shən }

grown-junction photocell [ELECTR] A photodiode consisting of a bar of semiconductor material having a *pn* junction at right angles to its length and an ohmic contact at each end of the bar. { ¦grōn ¦jəŋk·shən 'fōd·ō,sel }

grown-junction transistor [ELECTR] A junction transistor in which different impurities are placed in the melt in sequence as the silicon or germanium seed crystal is slowly withdrawn, to produce the alternate *pn* and *np* junctions. { ¦grōn ¦jəŋk·shən tran'zis·tər }

G-scan *See* G-display. { 'jē ˌskan }

G-scope *See* G-display. { 'jē ˌskōp }

GSM [COMMUN] A digital cellular telephone technology that is based on time-division multiple access; it operates on the 900-megahertz and 1.8-gigahertz bands in Europe, where it is the predominant cellular system, and on the 1.9-gigahertz band in the United States. Derived from global system for mobile communications.

G string *See* field waveguide. { 'jē ˌstriŋ }

guard arm [ELEC] **1.** Crossarm placed across and in line with a cable to prevent damage to the cable. **2.** Crossarm located over wires to prevent foreign wires from falling into them. { 'gärd ˌärm }

guard band [ELECTR] A narrow frequency band provided between adjacent channels in certain portions of the radio spectrum to prevent interference between stations. { 'gärd ˌband }

guarded command [COMPUT SCI] A program statement within a group of such statements that determines whether the other statements will be executed by the computer. { 'gärd·əd kə'mand }

guarding [ELEC] A method of eliminating surface-leakage effects from measurements of electrical resistance which employs a low-resistance conductor in the vicinity of one of the terminals or a portion of the measuring circuit. { 'gärd·iŋ }

guard relay [ELEC] Used in the linefinder circuit to make sure that only one linefinder can be connected to any line circuit when two or more line relays are operated simultaneously. { 'gärd ˌrē,lā }

guard ring [ELEC] A ring-shaped auxiliary electrode surrounding one of the plates of a parallel-plate capacitor to reduce edge effects. [ELECTR] A ring-shaped auxiliary electrode used in an electron tube or other device to modify the electric field or reduce insulator leakage; in a counter tube or ionization chamber a guard ring may also serve to define the sensitive volume. [PHYS] A device used in heat flow experiments to ensure an even distribution of heat, consisting of a ring that surrounds the specimen and is made of a similar material. { 'gärd ˌriŋ }

guard shield [ELECTR] Internal floating shield that surrounds the entire input section of an amplifier; effective shielding is achieved only when the absolute potential of the guard is stabilized with respect to the incoming signal. { 'gärd ˌshēld }

guard signal [COMPUT SCI] A signal used in digital-to-analog converters, analog-to-digital converters, or other converters which permits values to be read or converted only when the values are not changing, usually to avoid ambiguity error. { 'gärd ˌsig·nəl }

guard wire [ELEC] A grounded conductor placed beneath an overhead transmission line in order to ground the line, in case it breaks, before reaching the ground. { 'gärd ˌwīr }

Gudden-Pohl effect [ELECTR] The momentary illumination produced when an electric field is applied to a phosphor previously excited by ultraviolet radiation. { 'güd·ən 'pōl iˌfekt }

guest computer [COMPUT SCI] A computer that operates under the control of another computer (the host). { 'gest kəmˌpyüd·ər }

GUI *See* graphical user interface. { 'gü,ē *or* ¦jē¦yü'ī }

guided propagation [COMMUN] Type of radio-wave propagation in which radiated rays are bent excessively by refraction in the lower layers of the atmosphere; this bending creates an effect much as if a duct or waveguide has been formed in the atmosphere to guide part of the radiated energy over distances far beyond the normal range. Also known as trapping. { 'gīd·əd präp·ə'gā·shən }

guided wave [ELECTROMAG] A wave whose energy is concentrated near a boundary or between substantially parallel boundaries separating materials of different properties and whose direction

of propagation is effectively parallel to these boundaries; waveguides transmit guided waves. ['gīd·əd 'wāv]

guide wavelength [ELECTROMAG] Wavelength of electromagnetic energy conducted in a waveguide; guide wavelength for all air-filled guides is always longer than the corresponding free-space wavelength. ['gīd ˌwāv,leŋkth]

guidewire [ENG] A wire embedded in the surface of the path traveled by an electromagnetically guided automated guided vehicle. ['gīd,wīr]

Guillemin line [ELECTR] A network or artificial line used in high-level pulse modulation to generate a nearly square pulse, with steep rise and fall, used in radar sets to control pulse width. [gē·yə'ma ˌlīn]

gulp [COMPUT SCI] A series of bytes considered as a unit. [gəlp]

Gunn amplifier [ELECTR] A microwave amplifier in which a Gunn oscillator functions as a negative-resistance amplifier when placed across the terminals of a microwave source. ['gən ˌam·plə,fī·ər]

Gunn diode *See* Gunn oscillator. ['gən ˌdī,ōd]

Gunn effect [ELECTR] Development of a rapidly fluctuating current in a small block of a semiconductor (perhaps *n*-type gallium arsenide) when a constant voltage above a critical value is applied to contacts on opposite faces. ['gən i,fekt]

Gunn oscillator [ELECTR] A microwave oscillator utilizing the Gunn effect. Also known as Gunn diode. ['gən ˌäs·ə,lād·ər]

GW *See* gigawatt.

gyrator [ELECTROMAG] A waveguide component that uses a ferrite section to give zero phase shift for one direction of propagation and 180° phase shift for the other direction; in other words, it causes a reversal of signal polarity for one direction of propagation but not for the other direction. Also known as microwave gyrator. ['jī,rād·ər]

gyrator filter [ELECTR] A highly selective active filter that uses a gyrator which is terminated in a capacitor so as to have an inductive input impedance. ['jī,rād·ər ˌfil·tər]

gyroklystron [ELECTR] A microwave tube which, like the gyrotron, is based on cyclotron resonance coupling between microwave fields and an electron beam in vacuum, but which employs two or more cavities, and in which electrons give up their energy to an alternating electric field in a circuit separate from the one that supports the field that bunches the electrons. [ˌjī·rə'klī,strän]

gyromagnetic coupler [ELECTR] A coupler in which a single-crystal yig (yttrium iron garnet) resonator provides coupling at the required low signal levels between two crossed stripline resonant circuits. [ˌjī·rō·mag'ned·ik 'kəp·lər]

gyrotron [ELECTR] **1.** A device that detects motion of a system by measuring the phase distortion that occurs when a vibrating tuning fork is moved. **2.** A type of microwave tube in which microwave amplification or generation results from cyclotron-resonance coupling between microwave fields and an electron beam in vacuum. Also known as cyclotron-resonance maser. ['jī·rəˌträn]

H

hacker [COMPUT SCI] A person who uses a computer system without a specific, constructive purpose or without proper authorization. { 'hak·ər }

hacking [COMPUT SCI] Use of a computer system without a specific, constructive purpose, or without proper authorization. { 'hak·iŋ }

halation [ELECTR] An area of glow surrounding a bright spot on a fluorescent screen, due to scattering by the phosphor or to multiple reflections at front and back surfaces of the glass faceplate. { hā'lā·shən }

half-adder [ELECTR] A logic element which operates on two binary digits (but no carry digits) from a preceding stage, producing as output a sum digit and a carry digit. { ¦haf ¦ad·ər }

half-adjust [COMPUT SCI] A rounding process in which the least significant digit is dropped and, if the least significant digit is one-half or more of the number base, one is added to the next more significant digit and all carries are propagated. { ¦haf ə¦jəst }

half block [COMPUT SCI] The unit of transfer between main storage and the buffer control unit; it consists of a column of 128 elements, each element 16 bytes long. { 'haf ¦bläk }

half-bridge [ELEC] A bridge having two power supplies, located in two of the bridge arms, to replace the single power supply of a conventional bridge. { 'haf ¦brij }

half carry [COMPUT SCI] A flag used in the central processing unit of some computers to indicate that a carry has occurred from the low-order N bits of a 2N-bit number to the high-order N bits. { 'haf ˌkar·ē }

half cycle [ENG] The time interval corresponding to half a cycle, or 180°, at the operating frequency of a circuit or device. { 'haf ¦sī·kəl }

half-cycle transmission [COMMUN] Data transmission and control system that uses synchronized sources of 60-hertz power at the transmitting and receiving ends; either of two receiver relays can be actuated by choosing the appropriate half-cycle polarity of the 60-hertz transmitter power supply. { 'haf ¦sī·kəl tranz'mish·ən }

half-duplex circuit [COMMUN] A circuit designed for half-duplex operation. Abbreviated HDX. { 'haf ¦dü ˌpleks ˌsər·kət }

half-duplex operation [COMMUN] Operation of a telegraph system in either direction over a single channel, but not in both directions simultaneously. { 'haf ¦dü ˌpleks äp·ə'rā·shən }

half-duplex repeater [ELECTR] Duplex telegraph repeater provided with interlocking arrangements which restrict the transmission of signals to one direction at a time. { 'haf ¦dü ˌpleks ri'pēd·ər }

half-height drive [COMPUT SCI] A personal-computer disk drive whose height is half that of earlier disk drives. { ¦haf ˌhīt 'drīv }

half-period zones *See* Fresnel zones. { 'haf ˌpir·ē·əd ˌzōnz }

half-power beamwidth [ELECTROMAG] The angle across the main lobe of an antenna pattern between the two directions at which the antenna's sensitivity is half its maximum value at the center of the lobe. Abbreviated HPBW. { 'haf ¦paù·ər 'bēmˌwidth }

half-power frequency [ELECTR] One of the two values of frequency, on the sides of an amplifier response curve, at which the voltage is $1/\sqrt{2}$ (70.7%) of a midband or other reference value. Also known as half-power point. { 'haf ¦paù·ər 'frē·kwən·sē }

half-power point [ELECTR] **1.** A point on the graph of some quantity in an antenna, network, or control system, versus frequency, distance, or some other variable at which the power is half that of a nearby point at which power is a maximum. **2.** *See* half-power frequency. { 'haf ¦paù·ər ˌpȯint }

half-pulse-repetition-rate delay [ELECTR] In the loran navigation system, an interval of time equal to half the pulse repetition rate of a pair of loran transmitting stations, introduced as a delay between transmission of the master and slave signals, to place the slave station signal on the B trace when the master station signal is mounted on the A trace pedestal. { 'haf ˌpəls ˌrep·ə'tish·ən ˌrāt diˌlā }

half-shift register [ELECTR] Logic circuit consisting of a gated input storage element, with or without an inverter. { 'haf ˌshift ˌrej·ə·stər }

half-subtracter [ELECTR] A logic element which operates on two digits from a preceding stage, producing as output a difference digit and a borrow digit. Also known as one-digit subtracter; two-input subtracter. { 'haf səb'trak·tər }

half tap [ELEC] Bridge placed across conductors without disturbing their continuity. { 'haf ˌtap }

half-track tape recorder *See* double-track tape recorder. { 'haf ˌtrak 'tāp riˌkȯrd·ər }

half-wave [ELEC] Pertaining to half of one cycle of a wave. [ELECTROMAG] Having an electrical length of a half wavelength. { 'haf ¦wāv }

half-wave amplifier [ELECTR] A magnetic amplifier whose total induced voltage has a frequency equal to the power supply frequency. { 'haf ¦wāv 'am·pləˌfī·ər }

half-wave antenna [ELECTROMAG] An antenna whose electrical length is half the wavelength being transmitted or received. { 'haf ¦wāv anˈten·ə }

half-wave dipole *See* dipole antenna. { 'haf ¦wāv 'dīˌpōl }

half-wavelength [ELECTROMAG] The distance corresponding to an electrical length of half a wavelength at the operating frequency of a transmission line, antenna element, or other device. { 'haf ¦wāvˌleŋkth }

half-wave rectification [ELECTR] Rectification in which current flows only during alternate half cycles. { 'haf ¦wāv ˌrek·tə·fəˈkā·shən }

half-wave rectifier [ELECTR] A rectifier that provides half-wave rectification. { 'haf ¦wāv 'rek·təˌfī·ər }

half-wave transmission line [ELECTROMAG] Transmission line which has an electrical length equal to one-half the wavelength of the signal being transmitted or received. { 'haf ¦wāv tranzˈmish·ən ˌlīn }

half-wave vibrator [ELEC] A vibrator having only one pair of contacts; interrupts the flow of direct current through the primary of a power transformer, but does not reverse the current. { 'haf ¦wāv 'vīˌbrād·ər }

half-word I/O buffer [COMPUT SCI] A buffer, the upper half being used to store the upper half of a word for both input and output characters, the lower half of the buffer being used for purposes such as the storage of constants. { 'haf ˌwərd ¦ī ¦ō ˌbəf·ər }

Hall-effect modulator [ELECTR] A Hall-effect multiplier used as a modulator to give an output voltage that is proportional to the product of two input voltages or currents. { 'hȯl iˌfekt 'mäj·əˌlād·ər }

Hall-effect multiplier [ELECTR] A multiplier based on the Hall effect, used in analog computers to solve such problems as finding the square root of the sum of the squares of three independent variables. { 'hȯl iˌfekt 'məl·təˌplī·ər }

Hall-effect switch [ELECTR] A magnetically activated switch that uses a Hall generator, trigger circuit, and transistor amplifier on a silicon chip. { 'hȯl iˌfekt ˌswich }

Hall resistance [ELECTR] The ratio of the transverse voltage developed across a current-carrying conductor, due to the Hall effect, to the current itself. { 'hȯl riˌzis·təns }

Hall voltage [ELECTR] The no-load voltage developed across a semiconductor plate due to the Hall effect, when a specified value of control current flows in the presence of a specified magnetic field. { 'hȯl ˌvōl·tij }

Hallwachs effect [ELECTR] The discharge of a negatively charged metal plate caused by photoemission when the plate is exposed to ultraviolet light. { 'häl,väks iˌfekt }

halo [ELECTR] An undesirable bright or dark ring surronding an image on the fluorescent screen of a television cathode-ray tube; generally due to overloading or maladjustment of the camera tube. { 'hā·lō }

halt [COMPUT SCI] The cessation of the execution of the sequence of operations in a computer program resulting from a halt instruction, hang-up, or interrupt. { hȯlt }

Hamming code [COMMUN] An error-correcting code used in data transmission. { 'ham·iŋ ˌkōd }

hamming distance *See* signal distance. { 'ham·iŋ ˌdis·təns }

ham radio *See* amateur radio. { ¦ham 'rād·ē·ō }

hand *See* end effector. { hand }

hand generator [ELEC] A manually cranked dynamo or alternator, usually used as the prime mover for emergency radio transmitters. { 'hand ¦jen·əˌrād·ər }

hand-held computer [COMPUT SCI] A small, battery-powered mobile computer for personal or business use. Also known as palmtop, personal digital assistant (PDA). { ¦hand,held kəmˈpyüd·ər }

hand-held scanner [ENG] An image-reading device that is held and operated by a person. { ¦hand ˌheld 'skan·ər }

handie-talkie [ELECTR] Two-way radio communications unit small enough to be carried in the hand. { 'hand·dē 'tȯk·ē }

handle [COMPUT SCI] **1.** One of several small squares that appear around a selected object in an object-oriented computer-graphics program, and can be dragged with a mouse to move, enlarge, reduce, or change the shape of the object. **2.** In particular, one of the two interior points on a Bézier curve that can be dragged to alter its shape. Also known as control handle. { 'han·dəl }

handler [COMPUT SCI] A computer program developed to perform one particular function, such as control of input from, and output to, a specific peripheral device. { ˌhand·lər }

hand-reset [ELEC] Pertaining to a relay in which the contacts must be reset manually to their original positions when normal conditions are resumed. { 'hand 'rēˌset }

handset [ENG] A combination of a telephone-type receiver and transmitter, and sometimes also other components, designed for holding in one hand. { 'hand,set }

handshaking [COMMUN] The establishment of synchronization between sending and receiving equipment by means of exchange of specific character configurations. { 'hand,shak·iŋ }

hang-up [COMPUT SCI] A nonprogrammed stop in a computer routine caused by a human mistake or a computer malfunction. { 'haŋˌəp }

haptic interface [COMPUT SCI] A device that allows a user to interact with a computer by receiving tactile feedback; for example, glove

or pen devices that allow users to touch and manipulate three-dimensional virtual objects. { ˌhap·tik 'in·tərˌfās }

haptics [COMPUT SCI] The study of the use of touch in order to produce computer interfaces that will allow users to interact with digital objects by means of force feedback and tactile feedback. { 'hap·tiks }

hard code [COMPUT SCI] Program statements that are written into the computer program itself, in contrast to external tables and files to hold values and parameters used by the program. { 'härd 'kōd }

hard-coded program [COMPUT SCI] A software program or program subroutine that is designed to perform a specific task and is not easily modified. { ˌhärd ˌkōd·əd 'prō·grəm }

hard copy [COMPUT SCI] Human-readable typewritten or printed characters produced on paper at the same time that information is being keyboarded in a coded machine language, as when punching cards or paper tape. { 'härd ˌkäp·ē }

hard crash [COMPUT SCI] An abrupt halting of operations by a computer due to a malfunction, allowing the users or operators of the computer little or no time to minimize its effects. { 'härd ˌkrash }

hard disk [COMPUT SCI] A magnetic disk made of rigid material, providing high-capacity random-access storage. { 'härd ˌdisk }

hard disk drive [COMPUT SCI] A high-capacity magnetic storage device that holds one or more hard disks and controls their positioning, reading, and writing; used to store programs and data, and to transfer instructions or information to the computer's working memory for use or further processing. Also known as hard drive. { 'härd ˌdisk ˌdrīv }

hard drive *See* hard disk drive. { 'härd ˌdrīv }

hard edit [COMPUT SCI] The process of checking and correction that causes data containing errors to be rejected by a computer system. { 'härd 'ed·it }

hardened circuit [ELECTR] A circuit that uses components whose tolerance to radiation released by a nuclear explosion has been increased by various radiation-hardening procedures. { 'härd·ənd ˌsər·kət }

hardened links [COMMUN] Transmission links that require special construction or installation to assure a high probability of survival under nuclear attack. { 'härd·ənd ˌliŋks }

hard error [COMPUT SCI] Any error that results from malfunctioning of hardware, including storage devices and data transmission equipment. { 'härd 'er·ər }

hard failure [COMPUT SCI] Equipment failure that requires repair by a person with specialized knowledge before the equipment can be put back into operation. { 'härd 'fāl·yər }

hard-limiting [COMMUN] Limiting condition for which there is little variation in the output signal over the input signal range where the input is subject to limiting. { 'härd ˌlim·əd·iŋ }

hard page [COMPUT SCI] A page break that is inserted in a document by the user, and whose location is not changed by the addition, deletion, or reformatting of text. { 'härd ˌpāj }

hard patch [COMPUT SCI] A modification of a computer program, generally to repair a software error, which is applied to a stored copy of the program in machine language, so that recompilation of the source program is unnecessary and the change is permanent. { 'härd 'pach }

hard return [COMPUT SCI] A control code that is entered into a document by pressing the enter key. { 'härd riˌtərn }

hard-sectored disk [COMPUT SCI] A disk whose sectors are set up during manufacture. { 'härd ˌsek·tərd 'disk }

hard tube *See* high-vacuum tube. { 'härd ˌtüb }

hardware [COMPUT SCI] The physical, tangible, and permanent components of a computer or a data-processing system. { 'härdˌwer }

hardware check *See* machine check. { 'härdˌwer ˌchek }

hardware compatibility [COMPUT SCI] Property of two computers such that the object code from one machine can be loaded and executed on the other to produce exactly the same results. { 'härdˌwer kəmˌpad·ə'bil·əd·ē }

hardware control [COMPUT SCI] The control of, and communications between, the various parts of a computer system. { 'härdˌwer kənˌtrōl }

hardware description language [COMPUT SCI] A computer language that facilitates the documentation, design, and manufacturing of digital systems, particularly very large-scale integrated circuits, and combines program verification techniques with expert system design methodologies. { 'härˌdwer di'skrip·shən ˌlaŋ·gwij }

hardware diagnostic [COMPUT SCI] A computer program designed to determine whether the components of a computer are operating properly. { 'härdˌwer dī·əg'näs·tik }

hardware division [COMPUT SCI] Mathematical division performed by electronic circuitry on a large computer as a result of a single machine instruction. { 'härˌdwer di'vizh·ən }

hardware floating point [COMPUT SCI] Complex circuitry within a central processing unit that carries out floating-point arithmetic. { 'härˌdwer 'flōd·iŋ 'pȯint }

hardware key *See* dongle. { 'härˌdwer ˌkē }

hardware monitor [COMPUT SCI] A system used to evaluate the performance of computer hardware; it collects information such as central processing unit usage from voltage level sensors that are attached to the circuitry and measure the length of time or the number of times various signals occur, and displays this information or stores it on a medium that is then fed into a special data-reduction program. { 'härdˌwer ˌmän·əd·ər }

hardware multiplexing [COMPUT SCI] A procedure in which a servicing unit interleaves its attention among a family of serviced units in such a way that the serviced units appear to be receiving constant attention. { 'härdˌwer 'məl·təˌplek·siŋ }

hardware multiplication [COMPUT SCI] Multiplication performed by electronic circuitry on a large computer as a result of a single machine instruction. { 'här,dwer ,məl·tə·plə,kā·shən }

hard-wire [ELEC] To connect electric components with solid, metallic wires as opposed to radio links and the like. { 'härd ¦wīr }

hard-wired [COMPUT SCI] Having a fixed wired program or control system built in by the manufacturer and not subject to change by programming. { 'härd ¦wīrd }

hard-wire telemetry *See* wire-link telemetry. { 'härd ,wīr tə'lem·ə·trē }

hard x-ray [ELECTR] An x-ray having high penetrating power. { 'härd ¦eks,rā }

harmful interference [COMMUN] Radiation, emission, or induction which endangers the functioning of a radionavigation broadcasting service or of a safety broadcasting service, or obstructs or repeatedly interrupts a radio service operating in accordance with the appropriate regulations. { 'härm·fəl ,int·ə'fir·əns }

harmonica bug [ELECTR] A surreptitious interception technique applied to telephone lines; the target instrument is modified so that a tuned relay bypasses the switch hook and ringing circuit when a 500-hertz tone is received; this tone was originally generated by use of a harmonica. { här'män·ə·kə ,bəg }

harmonic analyzer [ELECTR] An instrument that measures the strength of each harmonic in a complex wave. Also known as harmonic wave analyzer. { här'man·ik 'an·ə,liz·ər }

harmonic antenna [ELECTROMAG] An antenna whose electrical length is an integral multiple of a half-wavelength at the operating frequency of the transmitter or receiver. { här'män·ik an'ten·ə }

harmonic attenuation [ELECTR] Attenuation of an undesired harmonic component in the output of a transmitter. { här'män·ik ə,ten·yə'wā·shən }

harmonic conversion transducer [ELECTR] A conversion transducer of which the useful output frequency is a multiple or a submultiple of the input frequency. { här'män·ik kən¦vər·zhən tranz,dü·sər }

harmonic detector [ELECTR] Voltmeter circuit so arranged as to measure only a particular harmonic of the fundamental frequency. { här'män·ik di'tek·tər }

harmonic distortion [ELECTR] Nonlinear distortion in which undesired harmonics of a sinusoidal input signal are generated because of circuit nonlinearity. { här'män·ik di'stór·shən }

harmonic filter [ELECTR] A filter that is tuned to suppress an undesired harmonic in a circuit. { här'män·ik 'fil·tər }

harmonic generator [ELECTR] A generator operated under conditions such that it generates strong harmonics along with the fundamental frequency. { här'män·ik 'jen·ə,rād·ər }

harmonic interference [COMMUN] Interference due to the presence of harmonics in the output of a radio transmission. { här'män·ik ,in·tər'fir·əns }

harmonic oscillator *See* sinusoidal oscillator. { här'män·ik 'äs·ə,lād·ər }

harmonic producer [ELECTR] Tuning-fork controlled oscillator device capable of producing odd and even harmonics of the fundamental tuning-fork frequency; used to provide carrier frequencies for broad-band carrier systems. { här'män·ik prə,dü·sər }

harmonic selective ringing [COMMUN] Selective ringing which employs currents of several frequencies and ringers, each tuned mechanically or electrically to the frequency of one of the ringing currents, so that only the desired ringer responds. { här'män·ik si¦lek·tiv 'riŋ·iŋ }

harmonic telephone ringer [ELECTR] Telephone ringer which responds only to alternating current within a very narrow frequency band. { här'män·ik 'tel·ə,fōn ,riŋ·ər }

harmonic wave analyzer *See* harmonic analyzer. { här'män·ik 'wāv ,an·ə,liz·ər }

harness [ELEC] Wire and cables so arranged and tied together that they may be inserted and connected, or may be removed after disconnection, as a unit. { 'här·nəs }

Harris flow [ELECTR] Electron flow in a cylindrical beam in which a radial electric field is used to overcome space charge divergence. { 'har·əs ,flō }

hartley [COMMUN] A unit of information content, equal to the designation of 1 of 10 possible and equally likely values or states of anything used to store or convey information. { 'härt·lē }

Hartley oscillator [ELECTR] A vacuum-tube oscillator in which the parallel-tuned tank circuit is connected between grid and anode; the tank coil has an intermediate tap at cathode potential, so the grid-cathode portion of the coil provides the necessary feedback voltage. { 'härt·lē ¦äs·ə ,lād·ər }

Hartley principle [COMMUN] The principle that the total number of bits of information that can be transmitted over a channel in a given time is proportional to the product of channel bandwidth and transmission time. { 'härt·lē ,prin·sə·pəl }

Hartree equation [ELECTR] An equation which gives the lowest anode voltage at which it is theoretically possible to maintain oscillation in the different modes of a magnetron. { 'här·trē i ,kwā·zhən }

hash [COMPUT SCI] Data which are obviously meaningless, caused by human mistakes or computer malfunction. Also known as garbage; gibberish. [ELECTR] *See* grass. { hash }

hash coding *See* hashing. { 'hash ,kōd·iŋ }

hashing [COMPUT SCI] **1.** A method for converting representations of values within fields, usually keys, to a more compact form. **2.** An addressing technique that uses keys to store and retrieve data in a file. { 'hash·iŋ }

hash total [COMPUT SCI] A sum obtained by adding together numbers having different meanings; the sole purpose is to ensure that the correct number of data have been read by the computer. { 'hash ¦tōd·əl }

HASP [COMPUT SCI] A technique used on some types of larger computers to control input and

output between a computer and its peripheral devices by utilizing mass-storage devices to temporarily store data. Acronym for Houston Automatic Spooling Processor. { hasp }

hatted code [COMMUN] Randomized code consisting of an encoding section; the plain text groups are arranged in alphabetical or other significant order, accompanied by their code groups arranged in a nonalphabetical or random order. { 'had·əd ¦kōd }

H attenuator *See* H network. { 'āch ə'ten·yə ˌwād·ər }

Hay bridge [ELEC] A four-arm alternating-current bridge used to measure inductance in terms of capacitance, resistance, and frequency; bridge balance depends on frequency. { 'hā ˌbrij }

H bend *See* H-plane bend. { 'āch ˌbend }

HBT *See* heterojunction bipolar transistor.

HDA *See* head/disk assembly.

H-display [NAV] A radar display format in which a short cursor is added to the target spot in a B-display format, the slope of which is proportional to the sine of the elevation angle. Also known as H-indicator; H-scan; H-scope. { 'āch di¦splā }

HDLC *See* high-level data-link control.

HDTV *See* high-definition television.

HDX *See* half-duplex circuit.

head [COMPUT SCI] A device that reads, records, or erases data on a storage medium such as a drum or tape; examples are a small electromagnet or a sensing or punching device. [ELECTR] The photoelectric unit that converts the sound track on motion picture film into corresponding audio signals in a motion picture projector. [ENG ACOUS] *See* cutter. { hed }

head crash [COMPUT SCI] The collision of the read-write head and the magnetic recording surface of a hard disk. Also known as disk crash. { 'hed ˌkrash }

head/disk assembly [COMPUT SCI] An airtight assembly including a disk pack and read/write heads. Abbreviated HDA. { 'hed 'disk ə'sem·blē }

header [COMMUN] The first section of a message, which contains information such as the addressee, routing, data, and origination time. [COMPUT SCI] *See* header label. [ELEC] A mounting plate through which the insulated terminals or leads are brought out from a hermetically sealed relay, transformer, transistor, tube, or other device. { 'hed·ər }

header label [COMPUT SCI] A block of data at the beginning of a magnetic tape file containing descriptive information to identify the file. Also known as header. { 'hed·ər ˌlā·bəl }

header record [COMPUT SCI] Computer input record containing common, constant, or identifying information for records that follow. { 'hed·ər ˌrek·ərd }

head gap [COMPUT SCI] The space between the read/write head and the recording medium, such as a disk in a computer. { 'hed ˌgap }

heading-upward plan position indicator [ELECTR] A plan position indicator in which the heading of the craft appears at the top of the indicator at all times. { ¦hed·iŋ 'əp·wərd ¦plan pə¦zish·ən 'ind·əˌkād·ər }

heading-upward plan position indicator [ELECTR] A plan position indicator in which the heading of the craft appears at the top of the indicator at all times. { ¦hed·iŋ 'əp·wərd ¦plan pə¦zish·ən 'ind·əˌkād·ər }

headlight [ELEC] A lamp, usually fitted with a reflector and a special lens, that is mounted on the front of a locomotive or automotive vehicle to illuminate the road ahead. { 'hedˌlīt }

head-mounted display [COMPUT SCI] A tracking device incorporating liquid-crystal displays or miniature cathode-ray tubes worn on a user's head to simulate a virtual environment (a three-dimensional sensation of depth) and to provide information on head movements for updating visual images. { ¦hed ˌmaunt·əd di'splā }

head parking [COMPUT SCI] The positioning of the read/write head of a hard disk over the landing zone to ensure against head crashes. { 'hed ˌpärk·iŋ }

head-per-track [COMPUT SCI] An arrangement having one read/write head for each magnetized track on a disk or drum to eliminate the need to move a single head from track to track. { 'hed pər 'trak }

headphone [ENG ACOUS] An electroacoustic transducer designed to be held against an ear by a clamp passing over the head, for private listening to the audio output of a communications, radio, or television receiver or other source of audio-frequency signals. Also known as phone. { 'hedˌfōn }

head section *See* end section. { 'hed ˌsek·shən }

headset [ENG ACOUS] A single headphone or a pair of headphones, with a clamping strap or wires holding them in position. { 'hedˌset }

head stepping rate [COMPUT SCI] The rate at which the read/write head of a disk drive moves from one track to another on the disk surface. { 'hed ¦step·iŋ ˌrāt }

hearing aid [ENG ACOUS] A miniature, portable sound amplifier for persons with impaired hearing, consisting of a microphone, audio amplifier, earphone, and battery. { 'hir·iŋ ˌād }

heat-activated battery *See* thermal battery. { 'hēt ¦ak·təˌvād·əd 'bad·ə·rē }

heat coil [ELEC] Protective device which uses a mechanical element which is allowed to move when the fusible substance that holds it in place is heated above a predetermined temperature by current in the circuit. { 'hēt ˌkȯil }

heater [ELECTR] An electric heating element for supplying heat to an indirectly heated cathode in an electron tube. Also known as electron-tube heater. { 'hēd·ər }

heater-type cathode *See* indirectly heated cathode. { 'hēd·ər ˌtīp 'kathˌōd }

heating element [ELEC] The part of a heating appliance in which electrical energy is transformed into heat. { 'hēd·iŋ ˌel·ə·mənt }

heat lamp [ELEC] An infrared lamp used for brooders in farming, for drying paint or ink, for

keeping food warm, and for therapeutic and other applications requiring heat with or without some visible light. { 'hēt ,lamp }

heat of emission [ELECTR] Additional heat energy that must be supplied to an electron-emitting surface to maintain it at a constant temperature. { 'hēt əv i'mish·ən }

heat run [ELEC] A series of temperature measurements made on an electric device during operating tests under various conditions. { 'hēt ,rən }

heatsink [ELEC] A mass of metal that is added to a device for the purpose of absorbing and dissipating heat; used with power transistors and many types of metallic rectifiers. Also known as dissipator. { 'hēt,siŋk }

heavy-ion source [ELECTR] Any source of ionized molecules or atoms of elements heavier than helium. { 'hev·ē ¦ī,ən 'sȯrs }

hectometric wave [COMMUN] A radio wave between the wavelength limits of 100 and 1000 meters, corresponding to the frequency range of 3000 to 300 kilohertz. { ,hek·tə'me·trik 'wāv }

Heidelberg capsule [ELECTR] A radio pill for telemetering pH values of gastric acidity. { 'hīd·əl·bərg ,kap·səl }

height control [ELECTR] The video display control that adjusts picture height. { 'hīt kən,trōl }

height gain [ELECTR] A radio-wave interference phenomenon which results in a more or less periodic signal strength variation with height; this specifically refers to interference between direct and surface-reflected waves; maxima or minima in these height-gain curves occur at those elevations at which the direct and reflected waves are exactly in phase or out of phase respectively. { 'hīt ,gān }

height input [ELECTR] Radar height information on target received by a computer from height finders and relayed via ground-to-ground data link or telephone. { 'hīt 'in,pu̇t }

height overlap coverage [ELECTR] Height-finder coverage within which there is an area of overlapping coverage from adjacent height finders or other radar stations. { 'hīt 'ō·vər,lap ,kəv·rij }

height-position indicator [ELECTR] Radar display which shows simultaneously angular elevation, slant range, and height of objects detected in the vertical sight plane. { 'hīt pə¦zish·ən 'in·də,kād·ər }

height-range indicator [ELECTR] **1.** Radar display which shows an echo as a bright spot on a rectangular field, slant range being indicated along the X axis, height above the horizontal plane being indicated (on a magnified scale) along the Y axis, and height above the earth being shown by a cursor. **2.** Cathode-ray tube from which altitude and range measurements of flightborne objects may be viewed. { 'hīt ¦rānj 'in·də,kād·ər }

height-range indicator display *See* range-height indicator display. { 'hīt ¦rānj 'in·də,kād·ər }

Heising modulation *See* constant-current modulation. { 'hī·ziŋ ,mäj·ə,lā·shən }

helical antenna [ELECTROMAG] An antenna having the form of a helix. Also known as helix antenna. { 'hel·ə·kəl an'ten·ə }

helical line [ELECTROMAG] A transmission line with a helical inner conductor. { 'hel·ə·kəl 'līn }

helical potentiometer [ELEC] A multiturn precision potentiometer in which a number of complete turns of the control knob are required to move the contact arm from one end of the helically wound resistance element to the other end. { 'hel·ə·kəl pə,ten·chē'äm·əd·ər }

helical resonator [ELECTROMAG] A cavity resonator with a helical inner conductor. { 'hel·ə·kəl 'rez·ən,ād·ər }

helical scanning [COMMUN] A method of facsimile scanning in which a single-turn helix rotates against a stationary bar to give horizontal movement of an elemental area. [ELECTR] A method of recording on videotape and digital audio tape in which the tracks are recorded diagonally from top to bottom by wrapping the tape around the rotating-head drum in a helical path. { 'hel·ə·kəl 'skan·iŋ }

helical traveling-wave tube *See* helix tube. { 'hel·ə·kəl ¦trav·ə·liŋ 'wāv ,tüb }

helitron [ELECTR] An electrostatically focused, low-noise backward-wave oscillator; the microwave output signal frequency can be swept rapidly over a wide range by varying the voltage applied between the cathode and the associated radio-frequency circuit. { 'hel·ə,trän }

helix [ELEC] A spread-out, single-layer coil of wire, either wound around a supporting cylinder or made of stiff enough wire to be self-supporting. { 'hē,liks }

helix antenna *See* helical antenna. { 'hē,liks an'ten·ə }

helix tube [ELECTR] A traveling-wave tube in which the electromagnetic wave travels along a wire wound in a spiral about the path of the beam, so that the wave travels along the tube at a velocity approximately equal to the beam velocity. Also known as helical traveling-wave tube. { 'hē,liks ,tüb }

helmet-mounted display [ELECTR] An electronic display that presents, on a combining glass within the visor of the helmet of a helicopter gunner, primary information for directing firepower; the angular direction of the helmet is sensed and used to control weapons to point in the same direction as the gunner is looking. Also known as visually coupled display. { 'hel·mət ¦maünt·əd di'splā }

helmholtz [ELEC] A unit of dipole moment per unit area, equal to 1 Debye unit per square angstrom, or approximately 3.335×10^{-10} coulomb per meter. { 'helm,hōlts }

Helmholtz resonator [ENG ACOUS] An enclosure having a small opening consisting of a straight tube of such dimensions that the enclosure resonates at a single frequency determined by the geometry of the resonator. { 'helm,hōlts ¦rez·ən ,ād·ər }

Helmholtz's theorem *See* Thévenin's theorem. { 'helm,hōlt·səz ,thir·əm }

help screen [COMPUT SCI] Instructions that explain how to use the software of a computer system and that can be presented on the screen of a video display terminal at any time. { 'help ˌskrēn }

HEMT *See* high-electron-mobility transistor.

heptode [ELECTR] A seven-electrode electron tube containing an anode, a cathode, a control electrode, and four additional electrodes that are ordinarily grids. Also known as pentagrid. { 'hepˌtōd }

hermaphroditic connector [ELEC] A connector in which both mating parts are exactly alike at their mating surfaces. Also known as sexless connector. { hərˌmafrə'did·ik kə'nek·tər }

herringbone pattern [ELECTR] An interference pattern sometimes seen on television receiver screens, consisting of a horizontal band of closely spaced V- or S-shaped lines. { 'herˌiŋˌbōn ˌpad·ərn }

Hertz antenna [ELECTROMAG] An ungrounded half-wave antenna. { 'hərts anˌten·ə }

Hertz effect [ELECTR] Increase in the length of a spark induced across a spark gap when the gap is irradiated with ultraviolet light. [ELECTROMAG] A dependence of the attenuation of a linearly polarized electromagnetic wave passing through a grating of metal rods on the angle between the electric vector and the rod direction, with the attenuation being a minimum when the two are perpendicular. { 'hərts iˌfekt }

hesitation [COMPUT SCI] A brief automatic suspension of the operations of a main program in order to perform all or part of another operation, such as rapid transmission of data to or from a peripheral unit. { ˌhez·ə'tā·shən }

Hesser's variation [COMPUT SCI] A variation of a Kiviat graph in which all variables are arranged so that their plots approach the circumference of the graph as the system being evaluated approaches saturation, and the scales on the various axes may not cover the full 0–100% range, or may be in units other than percent. { 'hes·ərz ˌver·ē ˌā·shən }

heterodyne [ELECTR] To mix two alternating-current signals of different frequencies in a nonlinear device for the purpose of producing two new frequencies, the sum of and difference between the two original frequencies. { 'hed·ə·rəˌdīn }

heterodyne analyzer [ENG ACOUS] A type of constant-bandwidth analyzer in which the electric signal from a microphone beats with the signal from an oscillator, and one of the side bands produced by this modulation is then passed through a fixed filter and detected. { 'hed·ə·rəˌdīn 'anˌəˌlīz·ər }

heterodyne conversion transducer *See* converter. { 'hed·ə·rəˌdīn kənˌvər·zhən tranzˌdü·sər }

heterodyne detector [ELECTR] A detector in which an unmodulated carrier frequency is combined with the signal of a local oscillator having a slightly different frequency, to provide an audio-frequency beat signal that can be heard with a loudspeaker or headphones; used chiefly for code reception. { 'hed·ə·rəˌdīn di'tek·tər }

heterodyne frequency [COMMUN] Either of the two new frequencies resulting from heterodyne action between the two input frequencies of a heterodyne detector. { 'hed·ə·rəˌdīn 'frē·kwən·sē }

heterodyne frequency meter [ELECTR] A frequency meter in which a known frequency, which may be adjustable or fixed, is heterodyned with an unknown frequency to produce a zero beat or an audio-frequency signal whose value is measured by other means. Also known as heterodyne wavemeter. { 'hed·ə·rəˌdīn 'frē·kwən·sēˌmēd·ər }

heterodyne interference *See* heterodyne whistle. { 'hed·ə·rəˌdīn ˌin·tər'fir·əns }

heterodyne measurement [ELECTR] A measurement carried out by a type of harmonic analyzer which employs a highly selective filter, at a frequency well above the highest frequency to be measured, and a heterodyning oscillator. { 'hed·ə·rəˌdīn 'mezh·ər·mənt }

heterodyne modulator *See* mixer. { 'hed·ə·rəˌdīn 'mäj·əˌlād·ər }

heterodyne oscillator [ELECTR] **1.** A separate variable-frequency oscillator used to produce the second frequency required in a heterodyne detector for code reception. **2.** *See* beat-frequency oscillator. { 'hed·ə·rəˌdīn 'äs·əˌlād·ər }

heterodyne reception [ELECTR] **1.** Radio reception in which the incoming radio-frequency signal is combined with a locally generated RF signal of different frequency, followed by detection. Also known as beat reception. **2.** In radar, use of a receiver that is tuned by adjusting a local oscillator signal within the receiver to a frequency differing from the frequency desired to be received by a fixed amount. When received signals are mixed with the reference signal, the difference frequency, called the intermediate frequency, is produced, permitting further signal processing at that convenient fixed frequency. { 'hed·ə·rəˌdīn ri'sep·shən }

heterodyne repeater [ELECTR] A radio repeater in which the received radio signals are converted to an intermediate frequency, amplified, and reconverted to a new frequency band for transmission over the next repeater section. { 'hed·ə·rəˌdīn ri'pēd·ər }

heterodyne wavemeter *See* heterodyne frequency meter. { 'hed·ə·rəˌdīn 'wāvˌmēd·ər }

heterodyne whistle [COMMUN] A steady, high-pitched audio tone heard in an ordinary amplitude-modulation radio receiver under certain conditions when two signals that differ slightly in carrier frequency enter the receiver and heterodyne to produce an audio beat. Also known as heterodyne interference. { 'hed·ə·rəˌdīn 'wis·əl }

heterojunction [ELECTR] The boundary between two different semiconductor materials, usually with a negligible discontinuity in the crystal structure. { ˌhed·ə·rō'jəŋk·shən }

heterojunction bipolar transistor [ELECTR] A bipolar transistor that has two or more materials

making up the emitter, base, and collector regions, giving it a much higher maximum frequency than a silicon bipolar transistor. Abbreviated HBT. { ¦hed·ə·rə¦jəŋk·shən 'bī¦pōl·ər tran¦zis·tər }

heterojunction field-effect transistor *See* high-electron-mobility transistor. { ¦hed·ə·rə¦jəŋk·shən 'fēld i¦fekt tran¦zis·tər }

heterostatic [ELEC] Pertaining to the measurement of one electrostatic potential by means of a different potential. { ¦hed·ə·rō'stad·ik }

heterostatic connection [ELEC] An arrangement of a quadrant electrometer in which the vane is maintained at a high potential with respect to one of the quadrant pairs and the deflection of the vane is linearly proportional to the unknown voltage applied across the quadrant pairs. { ¦hed·ə·rə¦stad·ik kə'nek·shən }

heuristic algorithm *See* dynamic algorithm. { hyù'ris·tik 'al·gə¦rith·əm }

heuristic program [COMPUT SCI] A program in which a computer tries each of several methods of solving a problem and judges whether the program is closer to solution after each attempt. Also known as heuristic routine. { hyù'ris·tik 'prō·grəm }

heuristic routine *See* heuristic program. { hyù 'ris·tik rü'tēn }

hexadecimal notation [COMPUT SCI] A notation in the scale of 16, using decimal digits 0 to 9 and six more digits that are sometimes represented by A, B, C, D, E, and F. { ¦hek·sə'des·məl nō'tā·shən }

hexode [ELECTR] A six-electrode electron tube containing an anode, a cathode, a control electrode, and three additional electrodes that are ordinarily grids. { 'hek¦sōd }

HF *See* high frequency.

HFET *See* high-electron-mobility transistor. { 'āch¦fet }

HH beacon [NAV] Nondirectional radio homing beacon which has a power output of 2000 watts or greater. { ¦āch'āch ¦bē·kən }

hickey [ELEC] A threaded coupling for attaching an electrical fixture to an outlet box, used when wires from the fixture come out of the end of a stem on the fixture, rather than through an opening in the side of the stem. { 'hik·ē }

hidden file [COMPUT SCI] A disk file that does not appear in a directory listing and cannot be displayed, changed, or deleted. { ¦hid·ən ¦fīl }

hierarchical control [CONT SYS] The organization of controllers in a large-scale system into two or more levels so that controllers in each level send control signals to controllers in the level below and feedback or sensing signals to controllers in the level above. Also known as control hierarchy. { ¦hī·ər¦är·kə·kəl kən'trōl }

hierarchical distributed processing system [COMPUT SCI] A type of distributed processing system in which processing functions are distributed outward from a central computer to intelligent terminal controllers or satellite information processors. Also known as host-centered system; host/satellite system. { ¦hī·ər¦är·kə·kəl di ¦strib·yəd·əd 'prä¦ses·iŋ ¦sis·təm }

hierarchical file [COMPUT SCI] A file with a grandfather-father-son structure. { ¦hī·ər¦är·kə·kəl 'fīl }

hierarchical level I [ELEC] The level of reliability evaluation of an electric power system that is concerned only with the generation facilities. { ¦hī·ər'ärk·ə·kəl ¦lev·əl 'wən }

hierarchical level II [ELEC] The level of reliability evaluation of an electric power system that is concerned only with the generation and transmission facilities. { ¦hī·ər'ark·ə·kəl ¦lev·əl 'tü }

hierarchical level III [ELEC] The level of reliability evaluation of an electric power system that is concerned with all three functional zones of the system, that is, generation, transmission, and distribution facilities. { ¦hī·ər'ärk·ə·kəl ¦lev·əl 'thrē }

hierarchical storage management [COMPUT SCI] A method of managing large amounts of data in which files are assigned to various storage media based on how soon or how frequently they will be needed. { ¦hī·ər¦är·kə·kəl 'stȯr·ij ¦man·ij·mənt }

hi-fi *See* high fidelity. { 'hī'fī }

high-altitude radio altimeter *See* radar altimeter. { 'hī ¦al·tə¦tüd 'rād·ē·ō al'tim·əd·ər }

high boost *See* high-frequency compensation. { 'hī ¦büst }

high core [COMPUT SCI] The locations with higher addresses in a computer's main storage, usually occupied by the operating system. { 'hī 'kór }

high-current rectifier [ELECTR] A solid-state device, gas tube, or vacuum tube used to convert alternating to direct current for powering low-impedance loads. { 'hī ¦kə·rənt 'rek·tə¦fī·ər }

high-current switch [ELEC] A switch used to redirect heavy current flow; usually has a make-before-break feature to prevent excessive arcing. { 'hī ¦kə·rənt 'swich }

high definition [COMMUN] Television or facsimile equivalent of high fidelity, in which the reproduced image contains such a large number of accurately reproduced elements that picture details approximate those of the original scene. { 'hī ¦def·ə'nish·ən }

high-definition television [COMMUN] A television system with a resolution of more than 1000 scan lines, as compared to 525–625 scan lines in conventional systems. Abbreviated HDTV. { ¦hī ¦def·ə¦nish·ən 'tel·ə¦vizh·ən }

high-density disk [COMPUT SCI] A diskette that holds two or more times as much data per unit area as a double-density disk of the same size. { ¦hī ¦den·səd·ē 'disk }

high-density drive [COMPUT SCI] A disk drive that accepts both high-density and double-density disks. { ¦hī ¦den·səd·ē 'drīv }

high-electron-mobility transistor [ELECTR] A type of field-effect transistor consisting of gallium arsenide and gallium aluminum arsenide, with a Schottky metal contact on the gallium aluminum arsenide layer and two ohmic contacts penetrating into the gallium arsenide layer, serving as the gate, source, and drain respectively. Abbreviated HEMT. Also known as heterojunction field-effect transistor (HFET); modulation-doped field-effect transistor (MODFET); selectively doped heterojunction transistor (SDHT); two-dimensional electron gas field-effect transistor (TEGFET). { 'hī i'lek,trän mō'bil·əd·ē tran,zis·tər }

higher-level language See high-level language. { 'hī·ər ,lev·əl ,laŋ·gwij }

higher-order language See high-level language. { 'hī·ər ,ór·dər ,laŋ·gwij }

higher-order software [COMPUT SCI] Software for designing and documenting an information system by decomposing the system into elementary components that are mathematically correct and error-free. Abbreviated HOS. { 'hī·ər ,ór·dər 'sóft,wer }

higher than high-level language [COMPUT SCI] A programming language, such as an application development language, report program, or financial planning language, that is oriented toward a particular application and is much easier to use for that application than a conventional programming language. { 'hī·ər than 'hī ,lev·əl ,laŋ·gwij }

high fidelity [ENG ACOUS] Audio reproduction that closely approximates the sound of the original performance. Also known as hi-fi. { 'hī fi'del·əd·ē }

high frequency [COMMUN] Federal Communications Commission designation for the band from 3 to 30 megahertz in the radio spectrum. Abbreviated HF. { 'hī 'frē·kwən·sē }

high-frequency carrier telegraphy [COMMUN] Form of carrier telegraphy in which the carrier currents have their frequencies above the range transmitted over a voice-frequency telephone channel. { 'hī 'frē·kwən·sē 'kar·ē·ər tə'leg·rə·fē }

high-frequency compensation [ELECTR] Increasing the amplification at high frequencies with respect to that at low and middle frequencies in a given band, such as in a video band or an audio band. Also known as high boost. { 'hī 'frē·kwən·sē ,käm·pən'sā·shən }

high-frequency propagation [COMMUN] Propagation of radio waves in the high-frequency band, which depends entirely on reflection from the ionosphere. { 'hī 'frē·kwən·sē ,präp·ə'gā·shən }

high-frequency resistance [ELEC] The total resistance offered by a device in an alternating-current circuit, including the direct-current resistance and the resistance due to eddy current, hysteresis, dielectric, and corona losses. Also known as alternating-current resistance; effective resistance; radio-frequency resistance. { 'hī 'frē·kwən·sē ri'zis·təns }

high-frequency transformer [ELECTR] A transformer which matches impedances and transmits a frequency band in the carrier (or higher) frequency ranges. { 'hī 'frē·kwən·sē tranz'fór·mər }

high-frequency triode [ELECTR] A triode designed for operation at high frequency, having small spacings between the grid and the cathode and anode, large emission and power densities, and low active and inactive capacitances. { 'hī 'frē·kwən·sē 'trī,ōd }

high-frequency voltmeter [ELECTR] A voltmeter designed to measure currents alternating at high frequencies. { 'hī 'frē·kwən·sē 'vōlt,mēd·ər }

high-impedance voltmeter [ELEC] A voltage-measuring device with a high-impedance input to reduce load on the unit under test; a vacuum-tube voltmeter is one type. { 'hī im 'pēd·əns 'vōlt,mēd·ər }

high-information-content display [ELECTR] An electronic display that has a sufficient number of pixels (75,000 to 2,000,000) to show standard or high-definition television images or comparable computer images. { 'hī ,in·fər'mā·shən ,kän ,tent di,splā }

high-K capacitor [ELEC] A capacitor whose dielectric material is a ferroelectric having a high dielectric constant, up to about 6000. { 'hī ,kā kə'pas·əd·ər }

high level [COMMUN] A range of allowed picture parameters defined by the MPEG-2 video coding specifications which corresponds to high-definition television. [ELECTR] The more positive of the two logic levels or states in a binary digital logic system. { 'hī 'lev·əl }

high-level data-link control Abbreviated HDLC. [COMMUN] A bit-oriented protocol for managing information flow in a data communications channel that supports both full-duplex and half-duplex transmission, and both point-to-point and multipoint communications using synchronous data transmission. [COMPUT SCI] A communications protocol that allows devices from different manufacturers to interface with each other and standardizes the transmission of packets of information between them. { 'hī ,lev·əl 'dad·ə ,liŋk kən,trōl }

high-level index [COMPUT SCI] The first part of a file name, which frequently specifies the category of data to which it belongs. { 'hī ,lev·əl 'in,deks }

high-level language [COMPUT SCI] A computer language whose instructions or statements each correspond to several machine language instructions, designed to make coding easier. Also known as higher-level language; higher-order language. { 'hī ,lev·əl 'laŋ·gwij }

high-level modulation [COMMUN] Modulation produced at a point in a system where the power

level approximates that at the output of the system. { 'hī ,lev·əl ,mäj·ə'lā·shən }

highlights [ELECTR] Bright areas occurring in a video image. { 'hī,līts }

high-low bias test [ELECTR] A routine maintenance procedure that tests equipment over and under normal operating conditions in order to detect defective units. { ¦hī ¦lō 'bī·əs ,test }

high-mu tube [ELECTR] A tube having a very high amplification factor. { 'hī ,myü 'tüb }

high-order [COMPUT SCI] Pertaining to a digit location in a numeral, the leftmost digit being the highest-order digit. { 'hī ¦ör·dər }

high-pass filter [ELECTR] A filter that transmits all frequencies above a given cutoff frequency and substantially attenuates all others. { 'hī ,pas 'fil·tər }

high-positive indicator [COMPUT SCI] A component in some computers whose status is "on" if the number tested is positive and nonzero. { 'hī ¦päz·əd·iv 'in·də,kād·ər }

high-potting [ELEC] Testing with a high voltage, generally on a production line. { 'hī ¦päd·iŋ }

high-pressure mercury-vapor lamp [ELECTR] A discharge tube containing an inert gas and a small quantity of liquid mercury; the initial glow discharge through the gas heats and vaporizes the mercury, after which the discharge through mercury vapor produces an intensely brilliant light. { 'hī ¦presh·ər 'mər·kyə·rē ¦vā·pər ,lamp }

high Q [ELECTR] A characteristic wherein a component has a high ratio of reactance to effective resistance, so that its Q factor is high. { ¦hī 'kyü }

high-Q cavity [ELECTROMAG] A cavity resonator which has a large Q factor, and thus has a small energy loss. Also known as high-Q resonator. { 'hī ,kyü 'kav·əd·ē }

high-Q resonator *See* high-Q cavity. { 'hī ,kyü 'rez·ən,ād·ər }

high-resistance voltmeter [ELEC] A voltmeter having a resistance considerably higher than 1000 ohms per volt, so that it draws little current from the circuit in which a measurement is made. { 'hī ri,zis·təns 'vōlt,mēd·ər }

high-resolution electron microscope [ELECTR] An electron microscope in which lens aberrations are minimized and lens currents and the accelerating voltage are maintained with a high degree of stability, in order to achieve extremely high resolution. { ¦hī ,rez·ə¦lü·shən i¦lek,trän 'mī·krə ,skōp }

high side [COMPUT SCI] The part of a remote device that communicates with a computer. { 'hī ,sīd }

high-side capacitance coupling [ELECTR] Taking the output of an oscillator or amplifier from a point of high potential, using a capacitor to block direct current flow. { 'hī ,sīd kə'pas·əd·əns ,kəp·liŋ }

high-speed carry [COMPUT SCI] A technique in parallel addition to speed up the propagation of carries. { 'hī ,spēd'kar·ē }

high-speed data acquisition system [COMPUT SCI] A system which collects and transmits data rapidly to a monitoring and controlling center. { 'hī ,spēd 'dad·ə ¦ak·wə,zish·ən ,sis·təm }

high-speed excitation system [ELEC] Excitation system capable of changing its voltage rapidly in response to a change in the excited generator field circuit. { 'hī 'spēd ,ek·sə'tā·shən ,sis·təm }

high-speed oscilloscope [ELECTR] An oscilloscope with a very fast sweep, capable of observing signals with rise times or periods on the order of nanoseconds. { 'hī ,spēd ä'sil·ə,skōp }

high-speed printer [COMPUT SCI] A printer which can function at a high rate, relative to the state of the art; 600 lines per minute is considered high speed. Abbreviated HSP. { 'hī ,spēd 'print·ər }

high-speed reader [COMPUT SCI] The fastest input device existing at a particular time in the state of the technology. { 'hī ,spēd 'rēd·ər }

high-speed relay [ELECTR] A relay specifically designed for short operate time, short release time, or both. { 'hī ,spēd 'rē,lā }

high-speed storage *See* rapid storage. { 'hī ,spēd 'stōr·ij }

high-technology robot [CONT SYS] A robot equipped with feedback, vision, real-time data acquisition, and powerful controllers. { 'hī tek 'näl·ə·¦jē 'rō,bät }

high-temperature fuel cell [ELEC] A fuel cell which operates at temperatures above about 550°C, can use inexpensive hydrocarbon fuels, and usually uses a molten salt as an electrolyte. { 'hī ,tem·prə·chər 'fyül ,sel }

high tension *See* high voltage. { 'hī ¦ten·chən }

high-tension separation *See* electrostatic separation. { 'hī ,ten·chən ,sep·ə'rā·shən }

high-tier system [COMMUN] A wireless telephone system that supports base stations with large coverage areas and low traffic densities, but provides low-quality voice service and has limited data-service capabilities with high delays. { ,hī 'tir ,sis·təm }

high-vacuum rectifier [ELECTR] Vacuum-tube rectifier in which conduction is entirely by electrons emitted from the cathode. { 'hī ¦vak·yüm 'rek·tə,fī·ər }

high-vacuum switching tube [ELECTR] A microwave transmit-receive (TR) tube of the high-vacuum variety, as contrasted with gas-tube or semiconductor devices. { 'hī ¦vak·yüm 'swich·iŋ ,tüb }

high-vacuum tube [ELECTR] Electron tube evacuated to such a degree that its electrical characteristics are essentially unaffected by gaseous ionization. Also known as hard tube. { 'hī ¦vak·yüm ,tüb }

high voltage [ELEC] A voltage on the order of thousands of volts. Also known as high tension. { 'hī ¦vōl·tij }

high-voltage direct current [ELEC] A long-distance direct-current power transmission system that uses direct-current voltages up to about 1 megavolt to keep transmission losses down. Abbreviated HVDC. { 'hī ¦vōl·tij di¦rekt 'kə·rənt }

high-voltage electron microscope [ELECTR] An electron microscope whose accelerating voltage

is on the order of 10^6 volts, as compared with 40–100 kilovolts for an ordinary electron microscope; it has the advantages of increased specimen penetration, reduced specimen damage, better theoretical resolution, and more efficient dark-field operation. { 'hī ¦vōl·tij i¦lek,trän 'mī·krə ,skōp }

high-voltage insulation |ELEC| Electrical insulation designed to prevent breakdown in a circuit operating at high voltages. { 'hī ¦vōl·tij ¦in·sə'lā·shən }

high-water mark |COMPUT SCI| The maximum number of jobs that are in a queue awaiting execution by a large computer system during a specified period of observation. { ¦hī 'wód·ər ,märk }

Hilbert transformer |ELECTR| An electric filter whose gain is $-j$ for positive frequencies and j for negative frequencies, where j is the square root of -1. { 'hil·bərt tranz,fór·mər }

hill-and-dale recording See vertical recording. { ¦hil ən ¦dāl ri'kórd·iŋ }

hill bandwidth |ELECTR| The difference between the upper and lower frequencies at which the gain of an amplifier is 3 decibels less than its maximum value. { ¦hil 'band,width }

H-indicator See H-display. { 'āch ¦in·də,kād·ər }

hi pot |ELEC| High potential voltage applied across a conductor to test the insulation or applied to an etched circuit to burn out tenuous conducting paths that might later fail in service. { 'hī ,pät }

hiss |COMMUN| Random noise in the audio-frequency range, similar to prolonged sibilant sounds. { his }

historical data |COMPUT SCI| Any data that is not actively maintained by a computer system and cannot be readily revised or updated. { hi'stär·ə·kəl 'dad·ə }

hit |COMPUT SCI| **1.** The obtaining of a correct answer in an information-retrieval system. **2.** An attempt to access a specified piece of information on a website; a count of the number of such attempts is an indicator or the usage or popularity of the site. { hit }

hit-on-the-fly system |COMPUT SCI| A printer in a computer system where either the print roller or the paper is in continuous motion. { ¦hid ón thə 'flī ,sis·təm }

hit rate |COMPUT SCI| The ratio of the number of records found and processed during a particular processing run, to the total number of records available. { 'hit ,rāt }

Hittorf dark space See cathode dark space. { 'hi·dȯrf 'därk ,spās }

Hittorf principle |ELECTR| The principle that a discharge between electrodes in a gas at a given pressure does not necessarily occur between the closest points of the electrodes if the distance between these points lies to the left of the minimum on a graph of spark potential versus distance. Also known as short-path principle. { 'hi·dȯrf ,prin·sə·pəl }

H mode See transverse electric mode. { 'āch ,mōd }

H network |ELECTR| An attenuation network composed of five branches and having the form of the letter H. Also known as H attenuator; H pad. { 'āch ¦net,wərk }

hog |COMPUT SCI| A computer program that uses excessive computer resources, such as memory or processing power, or requires excessive time to execute. { häg }

hoghorn antenna See horn antenna. { 'häg,hȯrn an'ten·ə }

hold |COMPUT SCI| To retain information in a computer storage device for further use after it has been initially utilized. |ELECTR| To maintain storage elements at equilibrium voltages in a charge storage tube by electron bombardment. { hōld }

hold circuit |ELECTR| A circuit in a sampled-data control system that converts the series of impulses, generated by the sampler, into a rectangular function, in order to smooth the signal to the motor or plant. { 'hōld ,sər·kət }

hold control |ELECTR| A manual control that changes the frequency of the horizontal or vertical sweep oscillator in an analog television receiver, so that the frequency more nearly corresponds to that of the incoming synchronizing pulses. { 'hōld kən,trōl }

holder |ELEC| A device that mechanically and electrically accommodates one or more crystals, fuses, or other components in such a way that they can readily be inserted or removed. { 'hōl·dər }

hold facility |COMPUT SCI| The ability of a computer to operate in a hold mode. { 'hōld fə ,sil·əd·ē }

holding anode |ELECTR| A small auxiliary anode used in a mercury-pool rectifier to keep a cathode spot energized during the intervals when the main-anode current is zero. { 'hōl·diŋ ,an,ōd }

holding beam |ELECTR| A diffused beam of electrons used to regenerate the charges stored on the dielectric surface of a cathode-ray storage tube. { 'hōl·diŋ ,bēm }

holding coil |ELECTR| A separate relay coil that is energized by contacts which close when a relay pulls in, to hold the relay in its energized position after the orginal operating circuit is opened. { 'hōl·diŋ ,kȯil }

holding current |ELECTR| The minimum current required to maintain a switching device in a closed or conducting state after it is energized or triggered. { 'hōl·diŋ ,kə·rənt }

holding time |COMMUN| Period of time a trunk or circuit is in use on a call, including operator's time in connecting and subscriber's or user's conversation time. { 'hōl·diŋ ,tīm }

hold lamp |ELEC| Indicating lamp which remains lighted while a telephone connection is being held. { 'hōld ,lamp }

hold mode |COMPUT SCI| The state of an analog computer in which its operation is interrupted without altering the values of the variables it is handling, so that computation can continue when the interruption is over. Also known as interrupt mode. { 'hōld ,mōd }

hold queue [COMPUT SCI] A queue consisting of jobs that have been submitted for execution by a large computer system and are waiting to be run. { 'hōld ˌkyü }

hole [SOLID STATE] A vacant electron energy state near the top of an energy band in a solid; behaves as though it were a positively charged particle. Also known as electron hole. { hōl }

hole conduction [ELECTR] Conduction occurring in a semiconductor when electrons move into holes under the influence of an applied voltage and thereby create new holes. { 'hōl kənˌdək·shən }

hole injection [ELECTR] The production of holes in an *n*-type semiconductor when voltage is applied to a sharp metal point in contact with the surface of the material. { 'hōl inˌjek·shən }

hole mobility [ELECTR] A measure of the ability of a hole to travel readily through a semiconductor, equal to the average drift velocity of holes divided by the electric field. { 'hōl mō,bil·əd·ē }

hole trap [ELECTR] A semiconductor impurity capable of releasing electrons to the conduction or valence bands, equivalent to trapping a hole. { 'hōl ˌtrap }

holistic masks [COMPUT SCI] In character recognition, that set of characters which resides within a character reader and theoretically represents the exact replicas of all possible input characters. { hō'lis·tik 'masks }

Hollerith string [COMPUT SCI] A sequence of characters preceded by an H and a character count in FORTRAN, as 4HSTOP. { 'häl·ə·rəth ˌstriŋ }

hollow cathode [ELECTR] A cathode which is hollow and closed at one end in a discharge tube filled with inert gas, designed so that radiation is emitted from the cathode glow inside the cathode. { 'häl·ō 'kath,ōd }

hollow-pipe waveguide [ELECTROMAG] A waveguide consisting of a hollow metal pipe; electromagnetic waves are transmitted through the interior and electric currents flow on the inner surfaces. { 'häl·ō ˌpīp 'wāv,gīd }

holographic memory [COMPUT SCI] A memory in which information is stored in the form of holographic images on thermoplastic or other recording films. { ˌhäl·əˈgraf·ik 'mem·rē }

holographic storage [COMMUN] A form of data storage in which bits of information are distributed throughout the storage volume and recorded interferometrically, rather than being stored at discrete locations in the medium. { ˌhäl·əˌgraf·ik 'stór·ij }

Holtz machine *See* Toepler-Holtz machine. { 'hōlts məˌshēn }

home [COMPUT SCI] The location at the upper left-hand corner of an electronic display. [NAV] To navigate toward a point by maintaining constant some navigational parameter other than altitude. { hōm }

home address [COMPUT SCI] A technique used to identify each disk track uniquely by means of a 9-byte record immediately following the index marker; the record contains a flag (good or defective track), cylinder number, head number, cyclic check, and bit count appendage. { 'hōm 'ad,res }

home-on-jam [ELECTR] A feature that permits radar or a passive seeker to track a jamming source in angle, to guide a weapon to the jammer. { ˌhōm ˌōn 'jam }

home page [COMPUT SCI] A document in a hypertext system that serves as the point of entry to a web of related documents, and generally contains introductory information and hyperlinks to other documents in the web. Also known as welcome page. { ˌhōm 'pāj }

home record [COMPUT SCI] The first record in the chaining method of file organization. { 'hōm ˌrek·ərd }

hometaxial-base transistor [ELECTR] Transistor manufactured by a single-diffusion process to form both emitter and collector junctions in a uniformly doped silicon slice; the resulting homogeneously doped base region is free from accelerating fields in the axial (collector-to-emitter) direction, which could cause undesirable high current flow and destroy the transistor. { 'hām·ə,tak·sē·əl ˌbās tran'zis·tər }

homing antenna [ELECTROMAG] A directional antenna array used in flying directly to a target that is emitting or reflecting radio or radar waves. { 'hōm·iŋ anˌten·ə }

homing beacon [NAV] A radio beacon, either airborne or on the ground, toward which an aircraft can fly if equipped with a radio compass or homing adapter. Also known as radio homing beacon. { 'hōm·iŋ ˌbē·kən }

homing device [ELECTR] A control device that automatically starts in the correct direction of motion or rotation to achieve a desired change, as in a remote-control tuning motor for a television receiver. [NAV] A transmitter, receiver, or adapter used for homing aircraft or used by aircraft for homing purposes. { 'hōm·iŋ diˌvīs }

homing relay [ELEC] A stepping relay that returns to a specified starting position before each operating cycle. { 'hōm·iŋ ˌrē,lā }

homodyne reception [ELECTR] **1.** A system of radio reception for suppressed-carrier systems of radiotelephony, in which the receiver generates a voltage having the original carrier frequency and combines it with the incoming signal. Also known as zero-beat reception. **2.** Referring to a radio or radar receiver in which received signals are mixed with a reference signal at the same frequency as the signal intended to be received, the mixing produces a voltage output dependent only on the phase difference of the two inputs, hence a voltage at the "beat" frequency if there is a slight difference. { 'hä·məˌdīn ri'sep·shən }

homogeneous network [COMPUT SCI] A computer network consisting of fairly similar computers from a single manufacturer. { ˌhō·məˌjē·nē·əs 'net,wərk }

homojunction bipolar transistor [ELECTR] Any bipolar transistor that is composed entirely of one type of semiconductor. { ˌhō·mōˌjəŋk·shən bīˌpō·lər tran'zis·tər }

homopolar [ELEC] **1.** Electrically symmetrical. **2.** Having equal distribution of charge. { ¦hä·mə'pō·lər }

homopolar generator [ELECTR] A direct-current generator in which the poles presented to the armature are all of the same polarity, so that the voltage generated in active conductors has the same polarity at all times; a pure direct current is thus produced, without commutation. Also known as acyclic machine; homopolar machine; unipolar machine. { ¦hä·mə'pō·lər 'jen·ə ,rād·ər }

homopolar machine *See* homopolar generator. { ¦hä·mə'pō·lər mə'shēn }

hook [COMPUT SCI] A modification of a computer program to add instructions to an existing part of the program. [ELECTR] A circuit phenomenon occurring in four-zone transistors, wherein hole or electron conduction can occur in opposite directions to produce voltage drops that encourage other types of conduction. { hůk }

hook collector transistor [ELECTR] A transistor in which there are four layers of alternating *n*- and *p*-type semiconductor material and the two interior layers are thin compared to the diffusion length. Also known as hook transistor; *pn* hook transistor. { ¦hůk kə'lek·tər tran,zis·tər }

hook transistor *See* hook collector transistor. { 'hůk tran,zis·tər }

hookup [ELEC] An arrangement of circuits and apparatus for a particular purpose. { 'hůk,əp }

hookup wire [ELEC] Tinned and insulated solid or stranded soft-drawn copper wire used in making circuit connections. { 'hůk,əp ,wīr }

hoot stop [COMPUT SCI] A closed loop that generates an audible signal, usually employed to signal an error or for operating convenience. { 'hůt ,stäp }

hop [COMMUN] A single reflection of a radio wave from the ionosphere back to the earth in traveling from one point to another. { häp }

horizontal blanking [ELECTR] Blanking of a video picture tube during the horizontal retrace. { ,här·ə'zänt·əl 'blaŋk·iŋ }

horizontal blanking pulse [ELECTR] The rectangular pulse that forms the pedestal of the composite video signal between active horizontal lines and causes the display device to be cut off during retrace. Also known as line-frequency blanking pulse. { ,här·ə'zänt·əl 'blaŋk·iŋ ,pəls }

horizontal centering control [ELECTR] The centering control provided in a video display to shift the position of the entire image horizontally in either direction on the screen. { ,här·ə'zänt·əl 'sen·tə·riŋ kən,trōl }

horizontal convergence control [ELECTR] The control that adjusts the amplitude of the horizontal dynamic convergence voltage in a video display device. { ,här·ə'zänt·əl kən'vər·jəns kən ,trōl }

horizontal definition *See* horizontal resolution. { ,här·ə'zänt·əl ,def·ə'nish·ən }

horizontal deflection electrode [ELECTR] One of a pair of electrodes that move the electron beam horizontally from side to side on the fluorescent screen of a cathode-ray tube employing electrostatic deflection. { ,här·ə'zänt·əl di'flek·shən i'lek,trōd }

horizontal deflection oscillator [ELECTR] The oscillator that produces, under control of the horizontal synchronizing signals, the sawtooth voltage waveform that is amplified to feed the horizontal deflection coils on the picture tube of a video display. Also known as horizontal oscillator. { ,här·ə'zänt·əl di'flek·shən 'äs·ə,lād·ər }

horizontal distributed processing system [COMPUT SCI] A type of distributed system in which two or more computers which are logically equivalent are connected together, with no hierarchy or master/slave relationship. { ,här·ə'zänt·əl di ¦strib·yəd·əd 'prä,ses·iŋ ,sis·təm }

horizontal drive control [ELECTR] The control in a television receiver, usually at the rear, that adjusts the output of the horizontal oscillator. Also known as drive control. { ,här·ə'zänt·əl 'drīv kən,trōl }

horizontal flyback [ELECTR] Flyback in which the electron beam of a picture tube returns from the end of one scanning line to the beginning of the next line. Also known as horizontal retrace. { ,här·ə'zänt·əl 'flī,bak }

horizontal frequency *See* line frequency. { ,här·ə'zänt·əl 'frē·kwən·sē }

horizontal hold control [ELECTR] The hold control that changes the free-running period of the horizontal deflection oscillator in an analog television receiver, so that the picture remains steady in the horizontal direction. { ,här·ə'zänt·əl 'hōld kən,trōl }

horizontal instruction [COMPUT SCI] An instruction in machine language to carry out independent operations on various operands in parallel or in a well-defined time sequence. { ,här·ə'zänt·əl in'strək·shən }

horizontal linearity control [ELECTR] A linearity control that permits narrowing or expanding of the width of the left half of a television receiver image, to give linearity in the horizontal direction so that circular objects appear as true circles. { ,här·ə'zänt·əl ,lin·ē'ar·əd·ē kən,trōl }

horizontal line frequency *See* line frequency. { ,här·ə'zänt·əl 'līn ,frē·kwən·sē }

horizontal oscillator *See* horizontal deflection oscillator. { ,här·ə'zänt·əl 'äs·ə,lād·ər }

horizontal output stage [ELECTR] The television receiver stage that feeds the horizontal deflection coils of the picture tube through the horizontal output transformer; may also include a part of the second-anode power supply for the picture tube. { ,här·ə'zänt·əl 'aůt,půt ,stāj }

horizontal output transformer [ELECTR] A transformer used in a television receiver to provide the horizontal deflection voltage, the high voltage for the second-anode power supply of the picture tube, and the filament voltage for the high-voltage rectifier tube. Also known as flyback transformer; horizontal sweep transformer. { ,här·ə'zänt·əl 'aůt,půt tranz,fȯr·mər }

horizontal parity check *See* longitudinal parity check. { ,här·ə'zänt·əl 'par·əd·ē ,chek }

horizontal polarization [COMMUN] Transmission of linear polarized radio waves whose electric field vector is parallel to the earth's surface. { ˌhär·əˈzänt·əl ˌpō·lə·rəˈzā·shən }

horizontal resolution [ELECTR] The number of individual picture elements or dots that can be distinguished in a horizontal scanning line of a video display. Also known as horizontal definition. { ˌhär·əˈzänt·əl ˌrez·əˈlü·shən }

horizontal retrace *See* horizontal flyback. { ˌhär·əˈzänt·əl ˈrēˌtrās }

horizontal scanning frequency [ELECTR] The number of horizontal lines scanned by the electron beam in a video system in 1 second. { ˌhär·əˈzänt·əl ˈskan·iŋ ˌfrē·kwən·sē }

horizontal sweep [ELECTR] The sweep of the electron beam from left to right across the screen of a cathode-ray tube. { ˌhär·əˈzänt·əl ˈswēp }

horizontal sweep transformer *See* horizontal output transformer. { ˌhär·əˈzänt·əl ˈswēp tranzˌfór·mər }

horizontal synchronizing pulse [ELECTR] The rectangular pulse transmitted at the end of each line in an analog television system, to keep the receiver in line-by-line synchronism with the transmitter. Also known as line synchronizing pulse. { ˌhär·əˈzänt·əl ˈsiŋ·krəˌniz·iŋ ˌpəls }

horizontal system [COMPUT SCI] A programming system in which instructions are written horizontally, that is, across the page. { ˌhär·əˈzänt·əl ˈsis·təm }

horizontal vee [ELECTROMAG] An antenna consisting of two linear radiators in the form of the letter V, lying in a horizontal plane. { ˌhär·əˈzänt·əl ˈvē }

horn [ELECTROMAG] *See* horn antenna. [ENG ACOUS] A tube whose cross-sectional area increases from one end to the other, used to radiate or receive sound waves and to intensify and direct them. Also known as acoustic horn. { hȯrn }

horn antenna [ELECTROMAG] A microwave antenna produced by flaring out the end of a circular or rectangular waveguide into the shape of a horn, for radiating radio waves directly into space. Also known as electromagnetic horn; flare (British usage); hoghorn antenna (British usage); horn; horn radiator. { ˈhȯrn anˈten·ə }

horn arrester [ELEC] A lightning arrester in which the spark gap has thick wire horns that spread outward and upward; the arc forms at the narrowest bottom part of the gap, travels upward, and extinguishes itself when it reaches the widest part of the gap. Also known as horn lightning arrester. { ˈhȯrn əˈres·tər }

horn gap [ELEC] Type of spark gap which is provided with divergent electrodes. { ˈhȯrn ˌgap }

horn-gap switch [ELEC] Form of air switch provided with arcing horns. { ˈhȯrn ˌgap ˌswich }

horn lightning arrester *See* horn arrester. { ˈhȯrn ˈlīt·niŋ əˌres·tər }

horn-loaded speaker [ENG ACOUS] A loudspeaker that has an acoustic horn between the diaphragm and the air load. { ˈhȯrn ˌlōd·əd ˈspēk·ər }

horn loudspeaker [ENG ACOUS] A loudspeaker in which the radiating element is coupled to the air or another medium by means of a horn. { ˈhȯrn ˈlaůdˌspēk·ər }

horn radiator *See* horn antenna. { ˈhȯrn ˈrād·əˌād·ər }

HOS *See* higher-order software.

hospital information system [COMPUT SCI] The collection, evaluation or verification, storage, and retrieval of information about a patient. { ˈhäsˌpid·əl ˌin·fərˈmā·shən ˌsis·təm }

host-based system [COMMUN] A communications system that is controlled by a central computer system. { ˈhōst ˌbāst ˌsis·təm }

host-centered system *See* hierarchical distributed processing system. { ˈhōst ˌsen·tərd ˌsis·təm }

host computer [COMPUT SCI] **1.** The central or controlling computer in a time-sharing or distributed-processing system. **2.** The computer upon which depends a specialized computer handling the input/output functions in a real-time system. **3.** A computer that can function as the source or recipient of data transfers on a network. { ˈhōst kəmˈpyüd·ər }

host language database management system [COMPUT SCI] A database management system that, from a programmer's point of view, represents an extension of an existing programming language. { ˈhōst ˌlaŋ·gwij ˈdad·əˌbās ˈman·ij·mənt ˌsis·təm }

host processor [COMPUT SCI] The central computer in a hierarchical distributed processing system, which is typically located at some central site where it serves as a focal point for the collection of data, and often for the provision of services which cannot economically be distributed. { ˈhōst ˈprāˌses·ər }

host/satellite system *See* hierarchical distributed processing system. { ˈhōst ˈsad·əl,īt ˌsis·təm }

hot *See* energized. { hät }

hot carrier [ELECTR] A charge carrier, which may be either an electron or a hole, that has relatively high energy with respect to the carriers normally found in majority-carrier devices such as thin-film transistors. { ˈhät ˈkar·ē·ər }

hot-carrier diode *See* Schottky barrier diode. { ˈhät ˌkar·ē·ər ˈdīˌōd }

hot cathode [ELECTR] A cathode in which electron or ion emission is produced by heat. Also known as thermionic cathode. { ˈhät ˈkathˌōd }

hot-cathode gas-filled tube *See* thyratron. { ˈhät ˈkathˌōd ˈgas ˈfild ˈtüb }

hot-cathode tube *See* thermionic tube. { ˈhät ˈkathˌōd ˌtüb }

hot editing [CONT SYS] A method for detecting errors in the programming of a robot in which as many errors as possible are identified and resolved during testing, without setting the robotic program to its starting condition. { ˈhät ˈed·əd·iŋ }

hot electron [ELECTR] An electron that is in excess of the thermal equilibrium number and, for metals, has an energy greater than the Fermi level; for semiconductors, the energy must be a definite amount above that of the edge of the conduction band. { ˈhät iˈlekˌträn }

hot-electron transistor [ELECTR] A transistor in which electrons tunnel through a thin emitter-

base barrier ballistically (that is, without scattering), traverse a very narrow base region, and cross a barrier at the base-collector interface whose height, controlled by the collector voltage, determines the fraction of electrons coming to the collector. { ¦hät i'lek,trän ,tran'zis·tər }

hot-electron triode [ELECTR] Solid-state, evaporated thin-film structure directly equivalent to a vacuum triode. { 'hät i,lek,trän 'trī,ōd }

hot-filament ionization gage [ELECTR] An ionization gage in which electrons emitted by an incandescent filament, and attracted toward a positively charged grid electrode, collide with gas molecules to produce ions which are then attracted to a negatively charged electrode; the ion current is a measure of the number of gas molecules. { 'hät ¦fil·ə·mənt ˌī·ə·nə'zā·shən ˌgāj }

hot hole [ELECTR] A hole that can move at much greater velocity than normal holes in a semiconductor. { 'hät ˌhōl }

hot junction [ELECTR] The heated junction of a thermocouple. { 'hät 'jəŋk·shən }

hot key [COMPUT SCI] A computer key or key combination that causes a specified action to occur, regardless of what else the computer is currently doing. { 'hät ˌkē }

hot line [COMMUN] Direct circuit between two points, available for immediate use without patching or switching. { 'hät 'līn }

hot link [COMPUT SCI] A linking of information in two documents so that modification of the information in the source document results in the same change in the destination document. { ¦hät 'liŋk }

hot spot [COMPUT SCI] A word in a multiprocessor memory that several processors attempt to access simultaneously, creating a conflict or bottleneck. { 'hät ˌspät }

hot wire [ELEC] **1.** A resistive wire in an electric relay that expands when heated and contracts when cooled. **2.** An electrical lead that has an electric potential with respect to the ground. { 'hät 'wīr }

hot-wire ammeter [ENG] An ammeter which measures alternating or direct current by sending it through a fine wire, causing the wire to heat and to expand or sag, deflecting a pointer. Also known as thermal ammeter. { 'hät ¦wīr 'a ˌmed·ər }

hot-wire microphone [ENG ACOUS] A velocity microphone that depends for its operation on the change in resistance of a hot wire as the wire is cooled by varying particle velocities in a sound wave. { 'hät ¦wīr 'mī·krəˌfōn }

housekeeping [COMPUT SCI] Those operations or routines which do not contribute directly to the solution of a computer program, but rather to the organization of the program. { 'haùs,kēp·iŋ }

housekeeping run [COMPUT SCI] The performance of a program or routine to maintain the structure of files, such as sorting, merging, addition of new records, or deletion or modification of existing records. { 'haùs,kēp·iŋ ˌrən }

Houston Automatic Spooling Processor *See* HASP. { hyüs·tən ¦ȯd·əˌmad·ik 'spül·iŋ ˌprä ˌses·ər }

howl [ENG ACOUS] Undesirable prolonged sound produced by a radio receiver or audio-frequency amplifier system because of either electric or acoustic feedback. { haùl }

howler [COMMUN] In telephone practice, an associated unit by which the test desk operator may connect a high tone of varying loudness to a subscriber's line to call the subscriber's attention to the fact that the phone receiver is off the hook. { 'haùl·ər }

howl repeater [COMMUN] Condition in telephone repeater operation where more energy is returned than sent, resulting in an oscillation being set up on the circuit. { 'haùl ri'pēd·ər }

H pad *See* H network. { ¦āch ˌpad }

h parameter [ELECTR] One of a set of four transistor equivalent-circuit parameters that conveniently specify transistor performance for small voltages and currents in a particular circuit. Also known as hybrid parameter. { ¦āch pə ˌram·əd·ər }

HPBW *See* half-power beamwidth.

H plane [ELECTROMAG] The plane of an antenna in which lies the magnetic field vector of linearly polarized radiation. { ¦āch ˌplān }

H-plane bend [ELECTROMAG] A rectangular waveguide bend in which the longitudinal axis of the waveguide remains in a plane parallel to the plane of the magnetic field vector throughout the bend. Also known as H bend. { ¦āch ˌplān ˌbend }

H-plane T junction [ELECTROMAG] Waveguide T junction in which the change in structure occurs in the plane of the magnetic field. Also known as shunt T junction. { ¦āch ˌplān 'tē ˌjəŋk·shən }

H-scan *See* H-display. { 'āch ˌskan }

H-scope *See* H-display. { 'āch ˌskōp }

HSP *See* high-speed printer.

HTML *See* Hypertext Markup Language.

HTTP *See* Hypertext Transfer Protocol.

hub [COMPUT SCI] An electric socket in a plugboard into which one may insert or connect leads or may plug wires. { həb }

hub ring [COMPUT SCI] A thin plastic ring placed around the center hole of a floppy disk to prevent the disk from warping and damaging its contents if it is improperly inserted in a disk drive. { 'həb ˌriŋ }

hue control [ELECTR] A control that varies the phase of the chrominance signals with respect to that of the burst signal in an analog color television receiver, in order to change the hues in the image. Also known as phase control. { 'hyü kənˌtrōl }

Huffman method [COMPUT SCI] A data compression technique in which a bit representation for each character is determined that is as close as possible to the character's predicted information content, based on its frequency of occurrence. { 'həf·mən ˌmeth·əd }

hum [ELECTR] An electrical disturbance occurring at the power supply frequency or its harmonics,

usually 60 or 120 hertz in the United States. { həm }

human-computer interaction [COMPUT SCI] The processes through which human users work with interactive computer systems. { ¦yü·mən kəm ¦pyüd·ər ˌin·tərˈak·shən }

hum bar [ELECTR] A dark horizontal band extending across a television picture due to excessive hum in the video signal applied to the input of the picture tube. { ˈhəm ˌbär }

hum-bucking coil [ENG ACOUS] A coil wound on the field coil of an excited-field loudspeaker and connected in series opposition with the voice coil, so that hum voltage induced in the voice coil is canceled by that induced in the hum-bucking coil. { ˈhəm ˌbək·iŋ ˌkȯil }

humidity capacitor [ELECTR] A device for measuring ambient relative humidity by sensing a change in capacitance. { hyüˈmid·əd·ē kəˈpas·əd·ər }

hum modulation [ELECTR] Modulation of a radio-frequency signal or detected audio-frequency signal by hum, heard in a radio receiver only when a station is tuned in. { ˈhəm ˌmäj·əˌlā·shən }

hunting [CONT SYS] Undesirable oscillation of an automatic control system, wherein the controlled variable swings on both sides of the desired value. [ELECTR] Operation of a selector in moving from terminal to terminal until one is found which is idle. { ˈhənt·iŋ }

hunting circuit *See* lockout circuit. { ˈhənt·iŋ ˌsər·kət }

HVDC *See* high-voltage direct current.

H wave *See* transverse electric wave. { ˈāch ˌwāv }

hybrid algebraic manipulation language [COMPUT SCI] The most ambitious type of algebraic manipulation language, which accepts the broadest spectrum of mathematical expressions but possesses, in addition, special representations and special algorithms for particular special classes of expressions. { ˈhī·brəd ˌal·jəˈbrā·ik maˌnip·yəˈlā·shən ˌlaŋ·gwij }

hybrid AM IBOC [COMMUN] The initial mode of the AM IBOC system approved by the Federal Communications Commission for use in the United States that adds digital audio capacity to an AM signal by inserting digital sidebands in the spectrum above, below, and within the analog AM signal. The digital audio data rate can range from 36 to 56 kbits/s, and the corresponding ancillary data rate is 0.4 kbits/s in both cases. { ˈhī·brəd ˈāˌem ˈīˌbāk }

hybrid balance [ELEC] Loss between two conjugate sides of a hybrid set less the same loss when one of the other sides is open or shorted. { ˈhī·brəd ˈbal·əns }

hybrid circuit [ELEC] A circuit in which two or more basically different types of components, such as tubes and transistors, performing similar functions are used together. { ˈhī·brəd ˈsər·kət }

hybrid coil *See* hybrid transformer. { ˈhī·brəd ˈkȯil }

hybrid computer [COMPUT SCI] A computer designed to handle both analog and digital data. Also known as analog-digital computer; hybrid system. { ˈhī·brəd kəmˈpyüd·ər }

hybrid distributed processing system [COMPUT SCI] A distributed processing system that includes both horizontal and hierarchical distribution. { ˈhī·brəd di¦strib·yəd·əd ˈprä,ses·iŋ ˌsis·təm }

hybrid electromagnetic wave [ELECTROMAG] Wave which has both transverse and longitudinal components of displacement. { ˈhī·brəd i¦lek·trō·mag¦ned·ik ˈwāv }

hybrid FM IBOC [COMMUN] The first of three modes in the FM IBOC system approved by the Federal Communications Commission for use in the United States that increases data capacity by a adding additional carriers closer to the analog host signal. The hybrid IBOC mode adds one frequency partition around the analog carrier and is characterized by the highest possible digital and analog audio quality with a limited amount of ancillary data available to the broadcaster. Digital audio data rates can range from 64 to 96 kbits/s, and the corresponding ancillary data rate can range from 33 kbits/s for 64-kbits/s audio and 1 kbit/s for 96-kbits/s audio. { ˈhī·brəd ˈefˌem ˈīˌbāk }

hybrid hardware control [COMPUT SCI] The control of and communication between the various parts of a hybrid computer. { ˈhī·brəd ˈhärdˌwer kənˌtrōl }

hybrid input/output [COMPUT SCI] The routines required to handle inputs to and outputs from a computer system comprising digital and analog computers. { ˈhī·brəd ¦inˌpůt ¦aůtˌpůt }

hybrid integrated circuit [ELECTR] A circuit in which one or more discrete components are used in combination with integrated-circuit construction. { ˈhī·brəd ¦int·əˌgrād·əd ˈsər·kət }

hybrid interface [COMPUT SCI] A device that joins a digital to an analog computer, converting digital signals transmitted serially by the digital computer into analog signals that are transmitted simultaneously to the various units of the analog computer, and vice versa. { ˈhī·brəd ˈin·tərˌfās }

hybrid junction [ELECTR] A transformer, resistor, or waveguide circuit or device that has four pairs of terminals so arranged that a signal entering at one terminal pair divides and emerges from the two adjacent terminal pairs, but is unable to reach the opposite terminal pair. Also known as bridge hybrid. { ˈhī·brəd ˈjəŋk·shən }

hybrid microcircuit [ELECTR] Microcircuit in which thin-film, thick-film, or diffusion techniques are combined with separately attached semiconductor chips to form the circuit. { ˈhī·brəd ˈmī·krōˌsər·kət }

hybrid network [COMMUN] Nonhomogeneous communications network required to operate with signals of dissimilar characteristics (such

as analog and digital modes). [ELECTR] A four-port circuit, useful in radar and other microwave applications as a power switch or signal comparator, in which two inputs add constructively at one output and destructively at the other, with good isolation between the two inputs and between the two outputs; the waveguide magic tee and the rat race are types of hybrid networks. { 'hī·brəd 'net,wərk }

hybrid parameter See h parameter. { 'hī·brəd pə'ram·əd·ər }

hybrid problem analysis [COMPUT SCI] The determination of the parts of a problem best suited for the digital computer. { 'hī·brəd ¦präb·ləm ə'nal·ə·səs }

hybrid programming [COMPUT SCI] Hybrid system routines that handle timing, function generation, and simulation. { 'hī·brəd 'prō,gram·iŋ }

hybrid redundancy [COMPUT SCI] A synthesis of triple modular redundancy and standby replacement redundancy, consisting of a triple modular redundancy system (or, in general, an N-modular redundancy system) with a bank of spares so that when one of the units in the triple modular redundancy system fails it is replaced by a spare unit. { 'hī·brəd ri'dən·dən·sē }

hybrid relay [ELEC] A relay in which solid-state elements are combined with moving contacts. { 'hī·brəd 'rē,lā }

hybrid repeater See hybrid transformer. { 'hī·brəd ri'pēd·ər }

hybrid set [ELEC] Two or more transformers interconnected to form a hybrid junction. Also known as transformer hybrid. { 'hī·brəd 'set }

hybrid simulation [COMPUT SCI] The use of a hybrid computer for purposes of simulation. { 'hī·brəd ,sim·yə'lā·shən }

hybrid system [COMPUT SCI] **1.** A computer system that performs two or more functions, such as data processing and word processing. **2.** See hybrid computer. { 'hī,brid ,sis·təm }

hybrid system checkout [COMPUT SCI] The static check of a hybrid system and of the digital program and analog wiring required to solve a problem. { 'hī·brəd ¦sis·təm 'chek,aůt }

hybrid tee [ELECTROMAG] A microwave hybrid junction composed of an E-H tee with internal matching elements; it is reflectionless for a wave propagating into the junction from any arm when the other three arms are match-terminated. Also known as magic tee. { 'hī·brəd 'tē }

hybrid thin-film circuit [ELECTR] Microcircuit formed by attaching discrete components and semiconductor devices to networks of passive components and conductors that have been vacuum-deposited on glazed ceramic, sapphire, or glass substrates. { 'hī·brəd ¦thin ,film 'sər·kət }

hybrid transformer [ELEC] A single transformer that performs the essential functions of a hybrid set. Also known as bridge transformer; hybrid coil; hybrid repeater. { 'hī·brəd tranz'fȯr·mər }

hydroelectricity [ELEC] Electric power produced by hydroelectric generators. Also known as hydropower. { ¦hī·drō·i,lek'tris·əd·ē }

hydrogen discharge lamp [ELECTR] A discharge lamp containing hydrogen and used as a source of ultraviolet radiation. { 'hī·drə·jən ¦dis,chärj ,lamp }

hydrogen thyratron [ELECTR] A thyratron containing hydrogen instead of mercury vapor to give freedom from effects of changes in ambient temperature; used in radar pulse circuits and stroboscopic photography. { 'hī·drə·jən 'thī·rə ,trän }

hydrophone [ENG] A device which receives underwater sound waves and converts them to electric waves. { 'hī·drə,fōn }

hydrophone array [COMMUN] A group of two or more hydrophones which feed into a common receiver. { 'hī·drə,fōn ə,rā }

hydrophone noise [ELEC] Any unwanted disturbance in the electric waves delivered by a hydrophone. { 'hī·drə,fōn ,nȯiz }

hydrophone response [ELEC] The electric waves delivered by a hydrophone in response to waterborne sound waves. { 'hī·drə,fōn ri¦späns }

hydropower See hydroelectricity. { 'hī·drə,paů·ər }

hygristor [ELECTR] A resistor whose resistance varies with humidity; used in some types of recording hygrometers. { hī'gris·tər }

hyperbolic amplitude [COMMUN] Excursion of a signal measured along hyperbolic rather than Cartesian coordinates. { ¦hī·pər¦bäl·ik 'am·plə ,tüd }

hyperbolic antenna [ELECTROMAG] A radiator whose reflector in cross section describes a half hyperbola. { ¦hī·pər¦bäl·ik an'ten·ə }

hyperbolic horn [ENG] Horn whose equivalent cross-sectional radius increases according to a hyperbolic law. { ¦hī·pər¦bäl·ik 'hȯrn }

hyperbolic sweep generator [ELECTR] A sweep generator that generates a waveform resembling a hyperbola. { ¦hī·pər¦bäl·ik 'swēp ,jen·ə,rād·ər }

hyperbolic waveform [ELECTR] A waveform which is an approximate hyperbola. { ¦hī·pər ¦bäl·ik 'wāv,fȯrm }

hypercube [COMPUT SCI] A configuration of parallel processors in which the locations of the processors correspond to the vertices of a mathematical hypercube and the links between them correspond to its edges. { 'hī·pər ,kyüb }

hyperdisk [COMPUT SCI] A mass-storage technique which uses a large-capacity storage and a disk for overflow. { 'hī·pər,disk }

hyperlink [COMPUT SCI] A highlighted word, phrase, or image in the display of a computer document which, when chosen, connects the user to another part of the same document or to different document (text, image, audio, video, or animation). In electronic documents, these cross references can be followed by a mouse click, and the target of the hyperlink may be on a physically distant computer connected by a network or the Internet. { 'hī·pər,liŋk }

hypermedia [COMPUT SCI] Hypertext-based systems that combine data, text, graphics, video, and sound. { 'hī·pər,mē·dē·ə }

hyperpure germanium detector [ELECTR] A variant of the lithium-drifted germanium crystal which uses high-purity germanium, making it possible to store the detector at room temperature rather than liquid nitrogen temperature. { ¦hī·pər¦pyůr jər¦mā·nē·əm di'tek·tər }

hypersensor [ELECTR] Single-component, resettable circuit breaker which operates as a majority-carrier tunneling device, and is used for overcurrent or overvoltage protection of integrated circuits. { ¦hī·pər¦sen·sər }

hypertape control unit *See* tape control unit. { 'hī·pər,tāp kən'trōl ,yü·nət }

hypertape drive *See* cartridge tape drive. { 'hī·pər ,tāp ,drīv }

hypertext [COMPUT SCI] A data structure in which there are links between words, phrases, graphics, or other elements and associated information so that selection of a key object can activate a linkage and reveal the information. { 'hī·pər ,tekst }

Hypertext Markup Language [COMPUT SCI] The language used to specifically encode the content and format of a document and to link documents on the World Wide Web. Abbreviated HTML. { ¦hī·pər,tekst 'märk,əp ,laŋ·gwij }

Hypertext Transfer Protocol [COMPUT SCI] The communication protocol for transmitting linked documents between computers; it is the basis for the World Wide Web and follows the TCP/IP protocol for the client-server model of computing. Abbreviated HTTP. { 'hī·pər,tekst 'tranz·fər ,prōd·ə,kól }

hypervisor [COMPUT SCI] A control program enabling two operating systems to share a common computing system. { 'hī·pər,vīz·ər }

hyphenation zone [COMPUT SCI] In word processing, the area adjacent to the right margin consisting of those positions at which words may be hyphenated. { 'hī·fə,nā·shən ,zōn }

hysteresimeter [ENG] A device for measuring hysteresis. { his,ter·ə'sim·əd·ər }

hysteresis [ELECTR] An oscillator effect wherein a given value of an operating parameter may result in multiple values of output power or frequency. { ,his·tə'rē·səs }

hysteresis motor [ELEC] A synchronous motor without salient poles and without direct-current excitation which utilizes the hysteresis and eddy-current losses induced in its hardened-steel rotor to produce rotor torque. { ,his·tə'rē·səs ¦mōd·ər }

IBOC *See* in-band/on-channel. { ¦ī¦bē¦ō'sē *or* 'ī,bäk }

IC *See* integrated circuit.

Icon [COMPUT SCI] A symbolic representation of a computer function that appears on an electronic display and makes it possible to command this function by selecting the symbol. { 'ī,kän }

Iconoscope [ELECTR] A television camera tube in which a beam of high-velocity electrons scans a photoemissive mosaic that is capable of storing an electric charge pattern corresponding to an optical image focused on the mosaic. Also known as storage camera; storage-type camera tube. { ī'kän·ə,skōp }

ICS system *See* intercarrier sound system. { ¦ī¦sē'es ,sis·təm }

ICW *See* interrupted continuous wave.

Ideal bunching [ELECTR] Theoretical condition in which the bunching of electrons in a velocity-modulated tube would give a single infinitely large current peak during each cycle. { ī'dēl 'bən·chiŋ }

Ideal dielectric [ELEC] Dielectric in which all the energy required to establish an electric field in the dielectric is returned to the source when the field is removed. Also known as perfect dielectric. { ī'dēl ,dī·i'lek·trik }

Ideal network [ELECTR] An interconnection of lumped, constant electrical quantities analyzed without consideration of noise and distributed parameters that would exist in actual settings. { ī'dēl 'net,wərk }

Ideal transducer [ELEC] Hypothetical passive transducer which transfers the maximum possible power from the source to the load. { ī'dēl tranz'dü·sər }

Ideal transformer [ELEC] A hypothetical transformer that neither stores nor dissipates energy, has unity coefficient of coupling, and has pure inductances of infinitely great value. { ī'dēl tranz'fór·mər }

I demodulator [ELECTR] Stage of an analog color television receiver which combines the chrominance signal with the color oscillator output to restore the I signal. { 'ī dē'mäj·ə,lād·ər }

Identification [CONT SYS] The procedures for deducing a system's transfer function from its response to a step-function input or to an impulse. { ī,dent·ə·fə'kā·shən }

Identification and authentication [COMPUT SCI] The process of determining with high assurance the identity of a person who is seeking access to a computing system. { ī,den·tə·fə¦kā·shən ən ə,then·tə'kā·shən }

Identification division [COMPUT SCI] The section of a program, written in the COBOL language, which contains the name of the program and the name of the programmer. { ī,dent·ə·fə'kā·shən di¦vizh·ən }

Identifier [COMPUT SCI] A symbol whose purpose is to specify a body of data. { ī'dent·ə,fī·ər }

Identifier word [COMPUT SCI] A full-length computer word associated with a search function. { ī'dent·ə,fī·ər ,wərd }

Identity gate *See* identity unit. { ī'den·ə,dē ,gāt }

Identity unit [COMPUT SCI] A logic element with several binary input signals and a single binary output signal whose value is 1 if all the input signals have the same value and 0 if they do not. Also known as identity gate. { ī'den·ə,dē ,yü·nət }

Idiostatic connection [ELEC] An arrangement of a quadrant electrometer in which the vane is electrically connected to one of the quadrant pairs and the deflection of the vane is proportional to the square of the unknown voltage applied across the quadrant pairs. { ,id·ē·ə ,stad·ik kə'nek·shən }

I-display [ELECTR] A radar display format in which the target appears as a circle, of radius proportional to range, when a tracking radar antenna is pointed at it exactly and as a segment of the circle when there is a pointing error. Also known as I-indicator; I-scan; I-scope. { 'ī di,splā }

Idle component *See* reactive component. { 'īd·əl kəm'pō·nənt }

Idle current *See* reactive current. { 'īd·əl ,kə·rənt }

Idler frequency [ELECTR] Of a parametric device, a sum or difference frequency generated within the parametric device other than the input, output, or pump frequencies which require specific circuit consideration to achieve the desired device performance; it is called an idler frequency since, in conventional parametric amplifiers, it is more or less a useless by-product of the parametric process. { 'īd·lər ,frē·kwən·sē }

idle time [COMPUT SCI] The time during which a piece of hardware in good operating condition is unused. { 'īd·əl ˌtīm }

idle trunk lamp [ELEC] Signal lamp associated with an outgoing trunk to indicate that the trunk is not busy. { 'īd·əl 'trəŋk ˌlamp }

IDP *See* integrated data processing.

IEEE 1394 [COMPUT SCI] The standard for connecting storage, digital audio and video, and other peripheral devices to personal computers at data transfer rates up to 400 million bits per second. Also known as firewire.

IF *See* intermediate frequency.

I-f amplifier *See* intermediate-frequency amplifier. { ¦ī'ef 'am·pləˌfī·ər }

IF canceler [ELECTR] In radar, a moving-target indicator canceler operating at the intermediate frequency using an internal phase reference as in a coherent radar, as opposed to a video canceler. { ¦ī'ef 'kans·lər }

I-frame *See* intra-coded picture. { 'īˌfrām }

IF statement *See* conditional jump. { 'if ˌstāt·mənt }

if then else [COMPUT SCI] A logic statement in a high-level programming language that defines the data to be compared and the actions to be taken as the result of a comparison. { ¦if ¦then 'els }

i-f transformer *See* intermediate-frequency transformer. { ¦ī ¦ef tranz'fȯr·mər }

IGBT *See* insulated-gate bipolar transistor.

IGES *See* initial graphics exchange specification.

IGFET *See* metal oxide semiconductor field-effect transistor. { 'igˌfet }

ignition interference [COMMUN] Radio interference due to the spark discharges in an automotive or other ignition system. { ig'nish·ənˌint·ə'fir·əns }

ignition reserve [ELEC] In an ignition system for an internal combustion engine, the difference between the minimum voltage available and the maximum voltage required by the system. { ig'nish·ən riˌzərv }

ignition timing [ELEC] The time of delivery of the spark from the coil to the spark plug in relation to the time the piston reaches the correct position for the power stroke in an internal combustion engine. { ig'nish·ənˌtīm·iŋ }

ignitor [ELECTR] **1.** An electrode used to initiate and sustain the discharge in a switching tube. Also known as keep-alive electrode (deprecated). **2.** A pencil-shaped electrode, made of carborundum or some other conducting material that is not wetted by mercury, partly immersed in the mercury-pool cathode of an ignitron and used to initiate conduction at the desired point in each alternating-current cycle. { ig'nīd·ər }

ignitron [ELECTR] A single-anode pool tube in which an ignitor electrode is employed to initiate the cathode spot on the surface of the mercury pool before each conducting period. { 'ig·nəˌträn }

ignitron contactor [ELECTR] A circuit containing an ignitron and control contacts that serves as a heavy-duty switch in the primary of a resistance-welding transformer. { 'ig·nəˌträn 'kän¦tak·tər }

ignore character [COMPUT SCI] Also known as erase character. **1.** A character indicating that no action whatever is to be taken, that is, a character to be ignored; often used to obliterate an erroneous character. **2.** A character indicating that the preceding or following character is to be ignored, as specified. **3.** A character indicating that some specified action is not to be taken. { ig'nȯr ˌkar·ik·tər }

I-indicator *See* I-display. { 'ī ¦in·dəˌkād·ər }

IIR filter *See* infinite impulse response filter. { ¦ī ¦ī'är ˌfil·tər }

I^2L *See* integrated injection logic.

ILF *See* infralow frequency.

Ill-conditioned problem [COMPUT SCI] A problem in which a small error in the data or in subsequent calculation results in much larger errors in the answers. { ¦il kən¦dish·ənd 'präb·ləm }

Illegal character [COMPUT SCI] A character or combination of bits that is not accepted as a valid representation by a computer or by a specific routine; commonly detected and used as an indication of a machine malfunction. { i'lē·gəl 'kar·ik·tər }

Illegal operation [COMPUT SCI] An operation specified by a program instruction that cannot be carried out by the computer. { i'lē·gəl äp·ə'rā·shən }

Illumination control [ELECTR] A photoelectric control that turns on lights when outdoor illumination decreases below a predetermined level. { əˌlü·məˌnā·shən kənˌtrōl }

Illustration program *See* drawing program. { ˌil·ə'strā·shən ˌprō·grəm }

image [COMMUN] **1.** One of two groups of side bands generated in the process of modulation; the unused group is referred to as the unwanted image. **2.** The scene reproduced by a video display. [COMPUT SCI] A copy of the information contained in one medium recorded on a different data medium. [ELECT] *See* electric image. [ELECTROMAG] The input reflection coefficient corresponding to the reflection coefficient of a specified load when the load is placed on one side of a waveguide junction and a slotted line is placed on the other. { 'im·ij }

Image admittance [ELECTR] The reciprocal of image impedance. { 'im·ij adˌmit·əns }

image antenna [ELECTROMAG] A fictitious electrical counterpart of an actual antenna, acting mathematically as if it existed in the ground directly under the real antenna and served as the direct source of the wave that is reflected from the ground by the actual antenna. { 'im·ij an ¦ten·ə }

image attenuation constant [ELECTR] The real part of the image transfer constant. { 'im·ij əˌten·yə'wā·shən ˌkän·stənt }

Image converter [ELECTR] *See* image tube. [OPTICS] A converter that uses a fiber optic bundle to change the form of an image, for more convenient recording and display or for the coding of secret messages. { 'im·ij kənˌvərd·ər }

image converter camera [ELECTR] A camera consisting of an image tube and an optical system which focuses the image produced on the phosphorescent screen of the tube onto photographic film. { 'im·ij ˌkən,vərd·ər ˌkam·rə }

image dissection photography [ELECTR] A method of high-speed photography in which an image is split in any one of various ways into interlaced space and time elements which can be unscrambled or played back through the system either to be viewed or to give a master negative. { 'im·ij di,sek·shən fə,täg·rə·fē }

image dissector [COMPUT SCI] In optical character recognition, a device that optically examines an input character for the purpose of breaking it down into its prescribed elements. { 'im·ij di ˌsek·tər }

image dissector tube [ELECTR] A television camera tube in which an electron image produced by a photoemitting surface is focused in the plane of the defining aperture and is scanned past that aperture. Also known as Farnsworth image dissector tube. { 'im·ij di,sek·tər ˌtüb }

image effect [ELECTROMAG] Effect produced on the field of an antenna due to the presence of the earth; electromagnetic waves are reflected from the earth's surface, and these reflections often are accounted for by an image antenna at an equal distance below the earth's surface. { 'im·ij i,fekt }

image enhancement [COMPUT SCI] Improvement of the quality of a picture, with the aid of a computer, by giving it higher contrast or making it less blurred or less noisy. { 'im·ij in'hans·mənt }

image force [ELEC] The electrostatic force on a charge in the neighborhood of a conductor, which may be thought of as the attraction to the charge's electric image. { 'im·ij ˌfȯrs }

image frequency [ELECTR] An undesired carrier frequency that differs from the frequency to which a superheterodyne receiver is tuned by twice the intermediate frequency. { 'im·ij ˌfrē·kwən·sē }

Image iconoscope [ELECTR] A camera tube in which an optical image is projected on a semitransparent photocathode, and the resulting electron image emitted from the other side of the photocathode is focused on a separate storage target; the target is scanned on the same side by a high-velocity electron beam, neutralizing the elemental charges in sequence to produce the camera output signal at the target. Also known as superemitron camera (British usage). { 'im·ij ī'kän·ə,skōp }

Image impedance [ELECTR] One of the impedances that, when connected to the input and output of a transducer, will make the impedances in both directions equal at the input terminals and at the output terminals. { 'im·ij im,pēd·ənsəns }

Image intensifier *See* light amplifier. { 'im·ij in'ten·sə,fī·ər }

Image interference [COMMUN] Interference occurring in a superheterodyne receiver when a station broadcasting on the image frequency is received along with the desired station. { 'im·ij ˌin·tər'fir·əns }

Image Isocon [ELECTR] A television camera tube which is similar to the image orthicon but whose return beam consists of scanning beam electrons that are scattered by positive stored charges on the target. { 'im·ij 'ī·sə,kän }

Image load [ELECTR] Load parameters reflected back to the source by line discontinuities. { 'im·ij ˌlōd }

Image orthicon [ELECTR] A television camera tube in which an electron image is produced by a photoemitting surface and focused on one side of a separate storage tube that is scanned on its opposite side by a beam of low-velocity electrons; electrons that are reflected from the storage tube, after positive stored charges are neutralized by the scanning beam, form a return beam which is amplified by an electron multiplier. { 'im·ij 'ȯr·thə,kän }

image parameter design [ELECTR] A method of filter design using image impedance and image transfer functions as the fundamental network functions. { 'im·ij pə'ram·əd·ər di,zīn }

image parameter filter [ELECTR] A filter constructed by image parameter design. { 'im·ij pə 'ram·əd·ər ˌfil·tər }

image phase constant [ELECTR] The imaginary part of the image transfer constant. { 'im·ij 'fāz ˌkän·stənt }

image potential [ELEC] The potential set up by an electric image. { 'im·ij pə,ten·chəl }

image processing [COMPUT SCI] A technique in which the data from an image are digitized and various mathematical operations are applied to the data, generally with a digital computer, in order to create an enhanced image that is more useful or pleasing to a human observer, or to perform some of the interpretation and recognition tasks usually performed by humans. Also known as picture processing. { 'im·ij ˌprä·ses·iŋ }

image ratio [ELECTR] In a heterodyne receiver, the ratio of the image frequency signal input at the antenna to the desired signal input for identical outputs. { 'im·ij ˌrā·shō }

image reject mixer [ELECTR] Combination of two balanced mixers and associated hybrid circuits designed to separate the image channel from the signal channels normally present in a conventional mixer; the arrangement gives image rejection up to 30 decibels without the use of filters. { 'im·ij 'rē,jekt ˌmik·sər }

image response [ELECTR] The response of a superheterodyne receiver to an undesired signal at its image frequency. { 'im·ij ri,späns }

Image restoration [COMPUT SCI] Operation on a picture with a digital computer to make it more closely resemble the original object. { 'im·ij ˌres·tə'rā·shən }

image-storage array [ELECTR] A solid-state panel or chip in which the image-sensing elements may be a metal oxide semiconductor or a charge-coupled or other light-sensitive device that can be manufactured in a high-density configuration. { 'im·ij ˌstȯr·ij ə,rā }

image table [CONT SYS] A data table that contains the status of all inputs, registers, and coils in a programmable controller. { 'im·ij ˌtā·bəl }

image transfer constant [ELECTR] One-half the natural logarithm of the complex ratio of the steady-state apparent power entering and leaving a network terminated in its image impedance. { 'im·ij 'tranz·fər ˌkän·stənt }

image tube [ELECTR] An electron tube that reproduces on its fluorescent screen an image of the optical image or other irradiation pattern incident on its photosensitive surface. Also known as electron image tube; image converter. { 'im·ij ˌtüb }

IMAP *See* Internet Mail Access Protocol. { 'īˌmap }

imitative deception [ELECTR] Introduction of electromagnetic radiations into enemy channels which imitate their own emissions, in order to mislead them. { 'im·əˌtād·iv di'sep·shən }

immediate-access [COMPUT SCI] **1.** Pertaining to an access time which is relatively brief, or to a relatively fast transfer of information. **2.** Pertaining to a device which is directly connected with another device. { i'mē·dē·ət 'ak·ses }

immediate address [COMPUT SCI] The value of an operand contained in the address part of an instruction and used as data by this instruction. { i'mē·dē·ət 'aˌdres }

immediate data [COMPUT SCI] Data that appears in an instruction exactly as it is to be processed. { i'mēd·ē·ət 'dad·ə }

immediate instruction [COMPUT SCI] A computer program instruction, part of which contains the actual data to be operated upon, rather than the address of that data. { i'mēd·ē·ət in'strək·shən }

immediate operand [COMPUT SCI] An operand contained in the instruction which specifies the operation. { i'mē·dē·ət 'äp·əˌrand }

immediate processing *See* demand processing. { i'mē·dē·ət 'präsˌes·iŋ }

immersion electron lens [ELECTR] An electron lens in which the object, usually the cathode, lies deep within the electric field so that the index of refraction varies rapidly in its vicinity. { i¦mər·zhən i'lkˌträn ˌlenz }

immersion electron microscope [ELECTR] An emission electron microscope in which the specimen is a flat conducting surface which may be heated, illuminated, or bombarded by high-velocity electrons or ions so as to emit low-velocity thermionic, photo-, or secondary electrons; these are accelerated to a high velocity in an immersion objective or cathode lens and imaged as in a transmission electron microscope. { ə'mər·zhən i¦lekˌträn 'mī·krəˌskōp }

immersion electrostatic lens *See* bipotential electrostatic lens. { ə'mər·zhən i¦lek·trəˌstad·ik 'lenz }

immersion heater [ELEC] An electric device for heating a liquid by direct immersion in the liquid. { ə'mər·zhən ˌhēd·ər }

immersive simulation *See* virtual reality. { i¦mər·siv sim·yə'lā·shən }

immittance [ELEC] A term used to denote both impedance and admittance, as commonly applied to transmission lines, networks, and certain types of measuring instruments. { i'mit·əns }

impact avalanche and transit time diode *See* IMPATT diode. { 'imˌpakt ¦av·əˌlanch ən 'tran·zit ˌtīm 'dīˌōd }

impact excitation [ELEC] Starting of damped oscillations in a radio circuit by a sudden surge, such as that produced by a spark discharge. { 'imˌpakt ˌek·sə'tā·shən }

impact ionization [ELECTR] Ionization produced by the impact of a high-energy charge carrier on an atom of semiconductor material; the effect is an increase in the number of charge carriers. { 'imˌpakt ˌī·ə·nə'zā·shən }

impact microphone [ENG ACOUS] An instrument that picks up the vibration of an object impinging upon another, used especially on space probes to record the impact of small meteoroids. { 'imˌpakt 'mī·krəˌfōn }

impact-noise analyzer [ENG] An analyzer used with a sound-level meter to evaluate the characteristics of impact-type sounds and electric noise impulses that cannot be measured accurately with a noise meter alone. { 'imˌpakt ˌnōiz 'an·əˌlī·zər }

IMPATT amplifier [ELECTR] A diode amplifier that uses an IMPATT diode; operating frequency range is from about 5 to 100 gigahertz, primarily in the C and X bands, with power output up to about 20 watts continuous-wave or 100 watts pulsed. { 'imˌpat ˌam·pləˌfī·ər }

IMPATT diode [ELECTR] A *pn* junction diode that has a depletion region adjacent to the junction, through which electrons and holes can drift, and is biased beyond the avalanche breakdown voltage. Derived from impact avalanche and transit time diode. { 'imˌpat ˌdīˌōd }

impedance *See* electrical impedance. { im'pēd·əns }

impedance-admittance matrix [ELECTR] A four-element matrix used to describe analytically a transistor in terms of impedances or admittances. { im'pēd·əns ad'mit·əns 'mā·triks }

impedance bridge [ELEC] A device similar to a Wheatstone bridge, used to compare impedances which may contain inductance, capacitance, and resistance. { im'pēd·əns ˌbrij }

impedance coil [ELEC] A coil of wire designed to provide impedance in an electric circuit. { im'pēd·əns ˌkȯil }

impedance compensator [ELEC] Electric network designed to be associated with another network or a line with the purpose of giving the impedance of the combination a desired characteristic with frequency over a desired frequency range. { im'pēd·əns 'kām·pənˌsād·ər }

impedance component [ELEC] **1.** Resistance or reactance. **2.** A device such as a resistor, inductor, or capacitor designed to provide impedance in an electric circuit. { im'pēd·əns kəmˌpō·nənt }

impedance coupling [ELEC] Coupling of two signal circuits with an impedance. { im'pēd·əns ˌkəp·liŋ }

impedance drop [ELEC] The total voltage drop across a component or conductor of an alternating-current circuit, equal to the phasor sum of the resistance drop and the reactance drop. { im'pēd·əns ˌdräp }

impedance irregularity [ELEC] A discontinuity or abrupt change which results from a junction between unlike sections of a transmission line or an irregularity on a line. { im'pēd·əns ˌi,reg·yə'lar·əd·ē }

impedance match [ELEC] The condition in which the external impedance of a connected load is equal to the internal impedance of the source or to the surge impedance of a transmission line, thereby giving maximum transfer of energy from source to load, minimum reflection, and minimum distortion. { im'pēd·əns ˌmach }

impedance-matching network [ELEC] A network of two or more resistors, coils, or capacitors used to couple two circuits in such a manner that the impedance of each circuit will be equal to the impedance into which it locks. Also known as line-building-out network. { im'pēd·əns ¦mach·iŋ ˌnet,wərk }

impedance matrix [ELEC] A matrix Z whose elements are the mutual impedances between the various meshes of an electrical network, satisfies the matrix equation V = ZI, where V and I are column vectors whose elements are the voltages and currents in the meshes. { im'pēd·əns ˌmā·triks }

impedance meter *See* electrical impedance meter. { im'pēd·əns ˌmēd·ər }

imperative language [COMPUT SCI] A programming language in which programs largely consist of a series of commands to assign values to objects. { im'per·əd·iv ˌlaŋ·gwij }

imperative statement [COMPUT SCI] A statement in a symbolic program which is translated into actual machine-language instructions by the assembly routine. { im'per·əd·iv ˌstāt·mənt }

implanted atom [ELECTR] An atom introduced into semiconductor material by ion implantation. { im'plant·əd 'ad·əm }

implanted device [ELECTR] A resistor or other device that is fabricated within a silicon or other semiconducting substrate by ion implantation. { im'plant·əd di'vīs }

implementation [COMPUT SCI] **1.** The installation of a computer system or an information system. **2.** The use of software on a particular computer system. { ˌim·plə,men'tā·shən }

implicit programming [CONT SYS] Robotic programming that uses descriptions of the tasks at hand which are less exact than in explicit programming. { im'plis·ət 'prō,gram·iŋ }

impressed current [ELEC] Direct current supplied by an external power source in a cathodic protection installation. { im¦prest 'kər·ənt }

impressed voltage [ELEC] Voltage applied to a circuit or device. { im'prest 'vōl·tij }

improvement factor [COMMUN] *See* noise improvement factor. [ELECTR] In radar, a measure of the effectiveness of Doppler-sensitive processes, given by the ratio of the signal-to-clutter power ratios with and without the use of the processing, averaged over all target velocities. { im'prüv·mənt ˌfak·tər }

improvement threshold [COMMUN] The condition of unity for the ratio of peak carrier voltage to peak noise voltage after selection and before any nonlinear process such as amplitude limiting. { im'prüv·mənt ˌthresh,hōld }

impulse excitation *See* shock excitation. { 'im ˌpəls ˌek·sə'tā·shən }

impulse generator [ELEC] An apparatus which produces very short surges of high-voltage or high-current power by discharging capacitors in parallel or in series. Also known as pulse generator. { 'im,pəls ˌjen·ə,rād·ər }

impulse modulation [CONT SYS] Modulation of a signal in which it is replaced by a series of impulses, equally spaced in time, whose strengths (integrals over time) are proportional to the amplitude of the signal at the time of the impulse. { 'im,pəls ˌmäj·ə,lā·shən }

impulse noise [ELEC] Noise characterized by transient short-duration disturbances distributed essentially uniformly over the useful passband of a transmission system. { 'im,pəls ˌnōiz }

impulse period *See* pulse period. { 'im,pəls ˌpir·ē·əd }

impulse relay [ELEC] A relay that stores the energy of a short pulse, to operate the relay after the pulse ends. { 'im,pəls ¦rē,lā }

impulse response [CONT SYS] The response of a system to an impulse which differs from zero for an infinitesimal time, but whose integral over time is unity; this impulse may be represented mathematically by a Dirac delta function. { 'im ˌpəls ri,späns }

impulse separator [ELECTR] In an analog television receiver, the circuit that separates the horizontal synchronizing impulses in the received signal from the vertical synchronizing impulses. { 'im,pəls ˌsep·ə,rād·ər }

impulse signaling [COMMUN] Conveying information by means of on-off conditions transmitted down a line or over free space. { 'im,pəls ¦sig·nə·liŋ }

impulse strength [ELEC] Voltage breakdown of insulation under voltage surges on the order of microseconds in duration. { 'im,pəls ˌstreŋkth }

impulse train [CONT SYS] An input consisting of an infinite series of unit impulses, equally separated in time. { 'im,pəls ˌtrān }

impulse transmission [COMMUN] Form of signaling which employs impulses of either or both polarities for transmission to indicate the occurrence of transitions in the signals; used principally to reduce the effects of low-frequency interference; the impulses are generally formed by suppressing the low-frequency components, including direct current, of the signals. { 'im ˌpəls tranz'mish·ən }

impulse-type telemeter [COMMUN] A telemeter that employs electric impulses as the translating means. { 'im,pəls ,tīp tə'lem·əd·ər }

impulse voltage [ELEC] A unidirectional voltage that rapidly rises to a peak value and then drops to zero more or less rapidly. Also known as pulse voltage. { 'im,pəls ,vōl·tij }

in-band/on-channel [COMMUN] A system of digital radio where the digital signals are placed within the current AM and FM bands and within the FCC-assigned channel of a radio station. Abbreviated IBOC. { ¦in ¦band ¦ȯn 'chan·əl }

incandescent lamp [ELEC] An electric lamp that produces light when a metallic filament is heated white-hot in a vacuum by passing an electric current through the filament. Also known as filament lamp; light bulb. { ,in·kən'des·ənt 'lamp }

incandescent readout [ELECTR] A readout in which each character is formed by energizing an appropriate combination of seven bar-shaped incandescent lamps. { ,in·kən'des·ənt 'rēd,au̇t }

inching See jogging. { 'inch·iŋ }

incident power [ELEC] Product of the outgoing current and voltage, from a transmitter, traveling down a transmission line to the antenna. { 'in·sə·dənt ¦pau̇·ər }

incident wave [ELECTR] A current or voltage wave that is traveling through a transmission line in the direction from source to load. { 'in·sə·dənt ¦wāv }

incoming first selector [ELEC] Connects incoming calls from outlying dial offices to local second selectors. { 'in,kəm·iŋ ¦fərst si'lek·tər }

incoming selector [ELEC] Selector associated with trunk circuits from another central office. { 'in,kəm·iŋ si'lek·tər }

incorporate [COMPUT SCI] To place in storage. { in'kȯr·pə,rāt }

incremental compiler [COMPUT SCI] A compiler that generates code for a statement, or group of statements, which is independent of the code generated for other statements. { ,iŋ·krə'ment·əl kəm'pīl·ər }

incremental computer [COMPUT SCI] A special-purpose computer designed to process changes in variables as well as absolute values; for instance, a digital differential analyzer. { ,iŋ·krə'ment·əl kəm'pyüd·ər }

incremental digital recorder [COMPUT SCI] Magnetic tape recorder in which the tape advances across the recording head step by step, as in a punched-paper-tape recorder; used for recording an irregular flow of data economically and reliably. { ,iŋ·krə'ment·əl ¦dij·əd·əl ri'kȯrd·ər }

incremental dump tape [COMPUT SCI] A safety technique used in time-sharing which consists in copying all files (created or modified by a user during a day) on a magnetic tape; in case of system failure, the file storage can then be reconstructed. Also known as failsafe tape. { ,iŋ·krə'ment·əl 'dəmp ,tāp }

incremental frequency shift [COMMUN] Method of superimposing incremental intelligence on another intelligence by shifting the center frequency of an oscillator a predetermined amount. { ,iŋ·krə'ment·əl 'frē·kwən·sē ,shift }

incremental mode [COMPUT SCI] The plotting of a curve on a cathode-ray tube by illuminating a fixed number of points at a time. { ,iŋ·krə'ment·əl ¦mōd }

incremental representation [COMPUT SCI] A way of representing variables used in incremental computers, in which changes in the variables are represented instead of the values of the variables themselves. { ,iŋ·krə'ment·əl ,rep·rə·zən'tā·shən }

independent-sideband modulation [COMMUN] Modulation in which the radio-frequency carrier is reduced or eliminated and two channels of information are transmitted, one on an upper and one on a lower sideband. Abbreviated ISB modulation. { ,in·də'pen·dənt ¦sīd,band ,mäj·ə'lā·shən }

independent-sideband receiver [ELECTR] A radio receiver designed for the reception of independent-sideband modulation, having provisions for restoring the carrier. { ,in·də'pen·dənt ¦sīd,band ri'sē·vər }

independent-sideband transmitter [ELECTR] A transmitter which produces independent-sideband modulated signals. { ,in·də'pen·dənt ¦sīd,band tranz'mid·ər }

index [COMPUT SCI] **1.** A list of record surrogates arranged in order of some attribute expressible in machine-orderable form. **2.** To produce a machine-orderable set of record surrogates, as in indexing a book. **3.** To compute a machine location by indirection, as is done by index registers. **4.** The portion of a computer instruction which indicates what index register (if any) is to be used to modify the address of an instruction. { 'in,deks }

index arithmetic unit [COMPUT SCI] A section of some computers that performs addition or subtraction operations on address parts of instructions for the purpose of indexing, boundary tests for memory protection, and so forth. { 'in ,deks ə'rith·mə·tik ,yü·nət }

indexed address [COMPUT SCI] An address which is modified, generally by means of index registers, before or during execution of a computer instruction. { 'in,dekst ə'dres }

indexed array [COMPUT SCI] An array of data items in which the individual items can be accessed by specifying their position through use of a subscript. { 'in,dekst ə'rā }

indexed sequential data set [COMPUT SCI] A collection of related data items that are stored sequentially on a key, but are also accessible through index tables maintained by the system. { 'in,dekst si¦kwen·chəl 'dad·ə ,set }

indexed sequential organization [COMPUT SCI] A sequence of records arranged in collating sequence used with direct-access devices. { 'in ,dekst si¦kwen·chəl ,ȯr·gə·nə'zā·shən }

index marker [COMPUT SCI] The beginning (and end) of each track in a disk, which is recognized by a special sensing device within the disk mechanism. { 'in,deks ,märk·ər }

index of cooperation [COMMUN] In rectilinear scanning or recording, the product of the total length of a scanning or recording line by the number of scanning or recording lines per unit length divided by pi. ['in,deks əv kō,äp·ə'rā·shən]

index of modulation *See* modulation factor. ['in ,deks əv ,mäj·ə'lā·shən]

index point [COMPUT SCI] A hardware reference mark on a disk or drum for use in timing. ['in ,deks ,point]

index register [COMPUT SCI] A hardware element which holds a number that can be added to (or, in some cases, subtracted from) the address portion of a computer instruction to form an effective address. Also known as base register; B box; B line; B register; B store; modifier register. ['in ,deks ,rej·ə·stər]

index word *See* modifier. ['in,deks ,wərd]

indicative data [COMPUT SCI] Data which describe a specific item. [in'dik·əd·iv 'dad·ə]

indicator [COMPUT SCI] A device announcing an error or failure. [ELECTR] A cathode-ray tube or other device that presents information transmitted or relayed from some other source, as from a radar receiver. ['in·də,kād·ər]

indicator element [ELECTR] A component whose variability under conditions of manufacture or use is likely to cause the greatest variation in some measurable parameter. ['in·də,kād·ər 'el·ə·mənt]

indicator gate [ELECTR] Rectangular voltage waveform which is applied to the grid or cathode circuit of an indicator cathode-ray tube to sensitize or desensitize it during a desired portion of the operating cycle. ['in·də,kād·ər ,gāt]

indicator lamp [ELEC] A neon lamp whose on-off condition is used to convey information. ['in·də,kād·ər ,lamp]

indicator tube [ELECTR] An electron-beam tube in which useful information is conveyed by the variation in cross section of the beam at a luminescent target. ['in·də,kād·ər ,tüb]

indirect address [COMPUT SCI] An address in a computer instruction that indicates a location where the address of the referenced operand is to be found. Also known as multilevel address. [,in·də'rekt ə'dres]

indirect addressing [COMPUT SCI] A programming device whereby the address part of an instruction is not the address of the operand but rather the location in storage where the address of the operand may be found. [,in·də'rekt ə'dres·iŋ]

indirect control [COMPUT SCI] The control of one peripheral unit by another through some sequence of events that involves human intervention. [,in·də'rekt kən'trōl]

indirectly heated cathode [ELECTR] A cathode to which heat is supplied by an independent heater element in a thermionic tube; this cathode has the same potential on its entire surface, whereas the potential along a directly heated filament varies from one end to the other. Also known as equipotential cathode; heater-type cathode; unipotential cathode. [,in·də'rek·lē ,hēd·əd 'kath,ōd]

indirect-path echo [ELECTROMAG] An echo resulting from radar transmission and reception, not via the direct path to the target but rather via reflections, for example, from a large building very near the radar, resulting in incorrect bearing estimation. [,in·də'rekt ,path 'ek·ō]

indirect stroke [ELEC] A lightning stroke that induces a voltage in a power or communications system without actually striking it. [,in·də'rekt 'strōk]

individual distributed numerical control [CONT SYS] A form of distributed numerical control involving only a few machines, each of which operates independently of the others and is unaffected by their failures. [,in·də'vij·ə·wəl di 'strib·yəd·əd nü'mer·ə·kəl kən'trōl]

individual line [COMMUN] Subscriber line arranged to serve only one main station, although additional stations may be connected to the line as extensions; an individual line is not arranged for discriminatory ringing with respect to the stations on that line. [,in·də'vij·ə·wəl 'līn]

induced dipole [ELEC] An electric dipole produced by application of an electric field. [in 'düst 'dī,pōl]

induced moment [ELEC] The average electric dipole moment per molecule which is produced by the action of an electric field on a dielectric substance. [in'düst 'mō·mənt]

inductance [ELECTROMAG] **1.** That property of an electric circuit or of two neighboring circuits whereby an electromotive force is generated (by the process of electromagnetic induction) in one circuit by a change of current in itself or in the other. **2.** Quantitatively, the ratio of the emf (electromotive force) to the rate of change of the current. [in'dək·təns]

inductance coil *See* coil. [in'dək·təns ,kȯil]

induction *See* electrostatic induction; electromagnetic induction. [in'dək·shən]

induction charging [ELEC] Production of electric charge on a body by means of electrostatic induction. [in'dək·shən ,chär·jiŋ]

induction field [ELECTROMAG] A component of an electromagnetic field associated with an alternating current in a loop, coil, or antenna which carries energy alternately away from and back into the source, with no net loss, and which is responsible for self-inductance in a coil or mutual inductance with neighboring coils. [in'dək·shən ,fēld]

induction frequency converter [ELEC] Slip-ring induction machine which is driven by an external source of mechanical power and whose primary circuits are connected to a source of electric energy having a fixed frequency; the secondary circuits deliver energy at a frequency proportional to the relative speed of the primary magnetic field and the secondary member. [in'dək·shən 'frē·kwən·sē kən,vərd·ər]

induction generator [ELEC] A nonsynchronous alternating-current generator whose construction is identical to that of an ac motor, and which

is driven above synchronous speed by external sources of mechanical power. { in'dək·shən ¦jen·ə·rād·ər }

induction instrument [ENG] Meter that depends for its operation on the reaction between magnetic flux set up by current in fixed windings, and other currents set up by electromagnetic induction in conducting parts of the moving system. { in'dək·shən ,in·strə·mənt }

induction loudspeaker [ENG ACOUS] Loudspeaker in which the current which reacts with the steady magnetic field is induced in the moving member. { in'dək·shən ¦laud,spēk·ər }

induction machine [ELEC] An asynchronous alternating-current machine, such as an induction motor or induction generator, in which the windings of two electric circuits rotate with respect to each other and power is transferred from one circuit to the other by electromagnetic induction. { in'dək·shən mə ,shēn }

induction motor [ELEC] An alternating-current motor in which a primary winding on one member (usually the stator) is connected to the power source, and a secondary winding on the other member (usually the rotor) carries only current induced by the magnetic field of the primary. { in'dək·shən ,mōd·ər }

induction problem [ELECTROMAG] An effect of potentials and currents induced in conductors of a telephone system by paralleling power facilities or power lines. { in'dək·shən ,präb·ləm }

induction regulator [ELEC] A transformer in which the voltage produced in a secondary winding is varied by changing the position of the primary winding. { in'dək·shən 'reg·yə,lād·ər }

induction watthour meter [ELEC] A watthour meter used with alternating current; the energy taken by a circuit over a period of time is proportional to the rotation in that period of a light aluminum disk, in which a driving torque is developed by the joint action of the alternating magnetic flux produced by the potential circuit and by the load current. { in'dək·shən 'wät,aůr ,mēd·ər }

inductive charge [ELEC] The charge that exists on an object as a result of its being near another charged object. { in'dək·tiv 'chärj }

inductive circuit [ELEC] A circuit containing a higher value of inductive reactance than capacitive reactance. { in'dək·tiv 'sər·kət }

inductive coordination [ELECTROMAG] Measures to reduce induction problems. { in'dək·tiv kō ,ȯrd·ən'ā·shən }

inductive coupler [ELEC] A mutual inductance that provides electrical coupling between two circuits; used in radio equipment. { in'dək·tiv 'kəp·lər }

inductive coupling [ELEC] Coupling of two circuits by means of the mutual inductance provided by a transformer. Also known as transformer coupling. { in'dək·tiv 'kəp·liŋ }

inductive fault analysis [ELECTR] A method of analyzing the effects of defects on an integrated circuit, in which a computer simulates an electron that scatters at random faults in the form of additional or missing areas of material on the set of drawings of the masks from which the circuits are fabricated. { in,dək·tiv 'fôlt ə,nal·ə·səs }

inductive feedback [ELECTR] **1.** Transfer of energy from the plate circuit to the grid circuit of a vacuum tube by means of induction. **2.** Transfer of energy from the output circuit to the input circuit of an amplifying device through an inductor, or by means of inductive coupling. { in'dək·tiv 'fēd·bak }

inductive filter [ELECTR] A low-pass filter used for smoothing the direct-current output voltage of a rectifier; consists of one or more sections in series, each section consisting of an inductor on one of the pair of conductors in series with a capacitor between the conductors. Also known as LC filter. { in'dək·tiv 'fil·tər }

inductive grounding [ELEC] Use of grounding connections containing an inductance in order to reduce the magnitude of short-circuit currents created by line-to-ground faults. { in'dək·tiv 'graůnd·iŋ }

inductive interference [COMMUN] Effect arising from the characteristics and inductive relations of electric supply and communications systems of such character and magnitude as would prevent the communications circuits from rendering service satisfactorily and economically if methods of inductive coordination were not applied. { in'dək·tiv ,in·tər'fir·əns }

inductive line pair [COMMUN] A telephone line displaying induction whose effects are of consequence, as in crosstalk; opposed to twisted pair. { in'dək·tiv 'līn ,per }

inductive load [ELEC] A load that is predominantly inductive, so that the alternating load current lags behind the alternating voltage of the load. Also known as lagging load. { in'dək·tiv 'lōd }

inductive neutralization [ELECTR] Neutralizing an amplifier whereby the feedback susceptance due to an interelement capacitance is canceled by the equal and opposite susceptance of an inductor. Also known as coil neutralization; shunt neutralization. { in'dək·tiv ,nü·trə·lə'zā·shən }

inductive-output tube [ELECTR] A tube in which output energy is obtained from the electron stream by electric induction between a cylindrical output electrode and the electron stream that flows through but does not touch the electrode. { in¦dək·tiv 'aůt,půt ,tüb }

inductive reactance [ELEC] Reactance due to the inductance of a coil or circuit. { in'dək·tiv rē'ak·təns }

inductive superconducting fault-current limiter *See* shielded-core superconducting fault-current limiter. { in¦dək·tiv ,sü·pər·kən¦dək·tiŋ 'fôlt ,cər·ənt ,lim·əd·ər }

inductive susceptance [ELEC] In a circuit containing almost no resistance, the part of the susceptance due to inductance. { in'dək·tiv sə'sep·təns }

inductive tuning [ELECTR] Tuning involving the use of a variable inductance. { in'dək·tiv 'tün·iŋ }

inductive voltage divider [ELEC] An autotransformer that has its winding subdivided into 10 equal turn sections so that when an alternating voltage V is applied to the whole winding the voltage across each section is nominally V/10; used as a ratio standard for electrical measurements. { in'dək·tiv 'vōl·tij di,vīd·ər }

inductive waveform [ELEC] A graph or trace of the effect of current buildup across an inductive network; proportional to the exponential of the product of a negative constant and the time. { in'dək·tiv 'wāv,fȯrm }

inductor *See* coil. { in'dək·tər }

inductor alternator [ELEC] A synchronous generator in which the field winding is fixed in magnetic position relative to the armature conductors. { in'dək·tər 'ȯl·tər,nād·ər }

inductor generator [ELEC] An alternating-current generator in which all the windings are fixed, and the flux linkages are varied by rotating an appropriately toothed ferromagnetic rotor; sometimes used for generating high power at frequencies up to several thousand hertz for induction heating. { in'dək·tər 'jen·ə,rād·ər }

inductor microphone [ENG ACOUS] Moving-conductor microphone in which the moving element is in the form of a straight-line conductor. { in'dək·tər 'mī·krə,fōn }

industrial frequency bands [COMMUN] The radio-frequency bands allocated in the United States for land mobile communications of private industries other than transportation. { in'dəs·trē·əl 'frē·kwən·sē ,banz }

industrial television [COMMUN] Closed-circuit video system used for remote viewing of industrial processes and operations; may also be used for training purposes. Abbreviated ITV. { in'dəs·trē·əl 'tel·ə,vizh·ən }

ineffective time [COMPUT SCI] Time during which a computer can operate normally but which is not used effectively because of mistakes or inefficiency in operating the installation or for other reasons. { ,in·i'fek·tiv 'tīm }

inertia switch [ELEC] A switch that is actuated by an abrupt change in the velocity of the item on which it is mounted. { i'nər·shə ,swich }

inference control [COMPUT SCI] A method of preventing data about specific individuals from being inferred from statistical information in a data base about groups of people. { 'in·frəns kən,trōl }

inference program [COMPUT SCI] A computer program that uses certain facts provided as input to reach conclusions. { 'in·frəns ,prō·grəm }

infinite baffle [ENG ACOUS] A loudspeaker baffle which prevents interaction between the front and back radiation of the loudspeaker. { 'in·fə·nət 'baf·əl }

infinite-capacity loading [CONT SYS] The deliberate overloading of a robotic work center with excessive force or weight in order to determine the overload protection necessary to maintain proper load conditions. { 'in·fə·nət kə'pas·əd·ē ,lōd·iŋ }

infinite impulse response filter [ELECTR] An electronic filter that will continue oscillating in a decaying manner forever after being exposed to a change in input. Abbreviated IIR filter. { ,in·fə·nət ¦im,pəls ri|späns ,fil·tər }

infinite sequence *See* sequence. { 'in·fə·nət 'sē·kwəns }

infinity [COMPUT SCI] Any number larger than the maximum number that a computer is able to store in any register. { in'fin·əd·ē }

infinity transmitter [ELECTR] A device used to tap a telephone; the telephone instrument is so modified that an interception device can be actuated from a distant source without the caller's becoming aware. { in'fin·əd·ē tranz'mid·ər }

infix operation [COMPUT SCI] An operation carried out within an operation, as the addition of a and b prior to the multiplication by c or division by d in the operation $(a+b)c/d$. { 'in,fiks ,äp·ə,rā·shən }

influence diagram [SYS ENG] A graph-theoretic representation of a decision, which may include four types of nodes (decision, chance, value, and deterministic), directed arcs between the nodes (which identify dependencies between them), a marginal or conditional probability distribution defined at each chance node, and a mathematical function associated with each of the other types of node. { 'in,flü·əns ,dī·ə,gram }

influence factor *See* telephone influence factor. { 'in,flü·əns ,fak·tər }

information [COMMUN] Data which has been recorded, classified, organized, related, or interpreted within a framework so that meaning emerges. { ,in·fər'mā·shən }

information architecture [COMPUT SCI] The organization of large bodies of content, as well as the organization and labeling (tagging) of content at the document level to make information easy to search, navigate, and manage. { ,in·fər ,mā·shən 'är·kə,tek·chər }

information bit [COMMUN] Bit that is generated by the data source but is not used by the data-transmission system. { ,in·fər'mā·shən ,bit }

information center [COMMUN] Center designed specifically for storing, processing, and retrieving information for dissemination at regular intervals, on demand or selectively, according to express needs of users. { ,in·fər'mā·shən ,sen·tər }

information channel [COMMUN] A facility used to transmit information between data-processing terminals separated by large distances. { ,in·fər'mā·shən ¦chan·əl }

information content [COMMUN] A numerical measure of the information generated in selecting a specific symbol (or message), equal to the negative of the logarithm of the probability of the symbol (or message) selected. Also known as negentropy. { ,in·fər'mā·shən ¦kän,tent }

information engineering [COMPUT SCI] The process of networking, collecting, analyzing, and

reporting information, as well as controlling business, manufacturing, or service operations. { ˌin·fərˈmā·shən ˌen·jəˌnir·iŋ }

information feedback system [COMMUN] An information transmission system in which a return transmission is used to verify the accuracy of the sent transmission. { ˌin·fərˈmā·shən ˈfēd ˌbak ˌsis·təm }

information float [COMPUT SCI] Information that is not located in a file or data base but is traveling between systems or is not assigned to a particular computer system. { ˌin·fərˈmā·shən ˌflōt }

information flow [COMPUT SCI] The graphic representation of data collection, data processing, and report distribution throughout an organization. { ˌin·fərˈmā·shən ˌflō }

information flow control [COMPUT SCI] A restriction on the use of information generated by a computer system that is consistent with the access controls on the resources of the system itself. { ˌin·fərˈmā·shən ˈflō kənˌtrōl }

information interchange [COMMUN] The exchange of information between machines. { ˌin·fərˈmā·shən ˈin·tərˌchānj }

information link *See* data link. { ˌin·fərˈmā·shən ˌliŋk }

information management [COMMUN] The science that deals with definitions, uses, value and distribution of information that is processed by an organization, whether or not it is handled by a computer. { ˌin·fərˈmā·shən ˈman·ij·mənt }

information network [COMPUT SCI] A service that provides a variety of information services to subscribers on a dial-up basis. Also known as subscription database. { ˌin·fərˈmā·shən ˈnet ˌwərk }

information precedence relation [COMPUT SCI] A statement that some specified piece of data is required for the production of another piece of data. { ˌin·fərˈmā·shən ˈpres·ə·dəns riˌlā·shən }

information processing [COMPUT SCI] **1.** The manipulation of data so that new data (implicit in the original) appear in a useful form. **2.** *See* data processing. { ˌin·fərˈmā·shən ˈprä·ses·iŋ }

Information Processing Language *See* IPL. { ˌin·fərˈmā·shən ˈprä·ses·iŋ ˈlaŋ·gwij }

information rate [COMMUN] The information content generated per symbol or per second by an information source. { ˌin·fərˈmā·shən ˌrāt }

information redundancy [COMPUT SCI] The use of more information than is absolutely necessary, such as the application of error-detection and error-correction codes, in order to increase the reliability of a computer system. { ˌin·fərˈmā·shən rəˈdən·dən·sē }

information requirements [COMPUT SCI] Actual or anticipated questions which may be posed to an information retrieval system. { ˌin·fərˈmā·shən rəˈkwīr·mənts }

information resources management [COMPUT SCI] A concept for processing information that focuses on the information and places data-processing technology (software and hardware) in a secondary role. { ˌin·fərˈmā·shən riˈsȯr·səz ˌman·ij·mənt }

information retrieval [COMPUT SCI] The technique and process of searching, recovering, and interpreting information from large amounts of stored data. { ˌin·fərˈmā·shən riˌtrē·vəl }

information selection systems [COMPUT SCI] A class of information processing systems which carry out a sequence of operations necessary to locate in storage one or more items assumed to have certain specified characteristics and to retrieve such items directly or indirectly, in whole or in part. { ˌin·fərˈmā·shən siˈlek·shən ˌsis·təmz }

information separator [COMPUT SCI] A character that separates items or fields of information in a record, especially a variable-length record. { ˌin·fərˈmā·shən ˈsep·əˌrād·ər }

information source [COMMUN] A system which produces messages by making successive selections from a group of symbols. { ˌin·fərˈmā·shən ˌsōrs }

information system [COMMUN] Any means for communicating knowledge from one person to another, ranging from simple verbal communication to completely computerized methods of storing, searching, and retrieving of information. { ˌin·fərˈmā·shən ˌsis·təm }

information system architecture [COMPUT SCI] The study of the structure of both computer systems and the organizations that use them, in order to develop computer systems that support the objectives of the organizations more effectively. { ˌin·fərˈmā·shən ˌsis·təm ˈär·kəˌtek·chər }

information technology [COMPUT SCI] The collection of technologies that deal specifically with processing, storing, and communicating information, including all types of computer and communications systems as well as reprographics methodologies. { ˌin·fərˈmā·shən tek ˈnäl·ə·jē }

information theory [COMMUN] A branch of theory which is devoted to problems in communications, and which provides criteria for comparing different communications systems on the basis of signaling rate, using a numerical measure of the amount of information gained when the content of a message is learned. { ˌin·fərˈmā·shən ˌthē·ə·rē }

information unit [COMMUN] A unit of information content, equal to a bit, nit, or hartley, according to whether logarithms are taken to base 2, *e*, or 10. { ˌin·fərˈmā·shən ˌyü·nət }

information utility [COMPUT SCI] An information network that specializes in supplying information to businesses and other organizations. { ˌin·fərˈmā·shən yüˌtil·əd·ē }

information word *See* data word. { ˌin·fərˈmā·shən ˌwərd }

infradyne receiver [ELECTR] A superheterodyne receiver in which the intermediate frequency is higher than the signal frequency, so as to obtain high selectivity. { ˈin·frəˌdīn riˈsē·vər }

infralow frequency [COMMUN] A designation for the band from 0.3 to 3 kilohertz in the radio spectrum. Abbreviated ILF. { ˈin·frəˌlō ˈfrē·kwən·sē }

infrared bolometer [ELECTR] A bolometer adapted to detecting infrared radiation, as opposed to microwave radiation. { ¦in·frə¦red bō'läm·əd·ər }

infrared communications set [ELECTR] Components required to operate a two-way electronic system using infrared radiation to carry intelligence. { ¦in·frə¦red kə¸myü·nə'kā·shənz ¸set }

infrared detector [ELECTR] A device responding to infrared radiation, used in detecting fires, or overheating in machinery, planes, vehicles, and people, and in controlling temperature-sensitive industrial processes. { ¦in·frə¦red di'tek·tər }

infrared-emitting diode [ELECTR] A light-emitting diode that has maximum emission in the near-infrared region, typically at 0.9 micrometer for *pn* gallium arsenide. { ¦in·frə¦red i¦mid·iŋ 'dī¸ōd }

infrared heterodyne detector [ELECTR] A heterodyne detector in which both the incoming signal and the local oscillator signal frequencies are in the infrared range and are combined in a photodetector to give an intermediate frequency in the kilohertz or megahertz range for conventional amplification. { ¦in·frə¦red ¦hed·ə·rə¸dīn di'tek·tər }

infrared image converter [ELECTR] A device for converting an invisible infrared image into a visible image, consisting of an infrared-sensitive, semitransparent photocathode on one end of an evacuated envelope and a phosphor screen on the other, with an electrostatic lens system between the two. Also known as infrared image tube. { ¦in·frə¦red 'im·ij kən¸vərd·ər }

infrared image tube *See* infrared image converter. { ¦in·frə¦red 'im·ij ¸tüb }

infrared jamming [ELECTR] An attempt to confuse heat-seeking missiles by emissions which overload their inputs or misdirect them. { ¦in·frə¦red 'jam·iŋ }

infrared lamp [ELEC] An incandescent lamp which operates at reduced voltage with a filament temperature of 4000°F (2200°C) so that it radiates electromagnetic energy primarily in the infrared region. { ¦in·frə¦red 'lamp }

infrared photoconductor [ELECTR] A conductor whose conductivity increases when it is exposed to infrared radiation. { ¦in·frə¦red ¦fōd·ō·kən ¦dək·tər }

infrared radiation [ELECTROMAG] Electromagnetic radiation whose wavelengths lie in the range from 0.75 or 0.8 micrometer (the long-wavelength limit of visible red light) to 1000 micrometers (the shortest microwaves). { ¦in·frə¦red ¸rād·ē'ā·shən }

infrared receiver [ELECTR] A device that intercepts or demodulates infrared radiation that may carry intelligence. Also known as nancy receiver. { ¦in·frə¦red ri'sē·vər }

infrared scanner [ELECTR] An infrared detector mounted on a motor-driven platform which causes it to scan a field of view line by line, much as in television. { ¦in·frə¦red 'skan·ər }

infrared thermistor [ELECTR] A thermistor used to measure the power of infrared radiation. { ¦in·frə¦red thər'mis·tər }

infrared transmitter [ELECTR] A transmitter that emits energy in the infrared spectrum; may be modulated with intelligence signals. { ¦in·frə ¦red tranz'mid·ər }

infrared vidicon [ELECTR] A vidicon whose photoconductor surface is sensitive to infrared radiation. { ¦in·frə¦red 'vid·ə¸kän }

inherent noise pressure *See* equivalent noise pressure. { in'hir·ənt 'nóiz ¸presh·ər }

inherent storage [COMPUT SCI] Any type of storage in which the storage medium is part of the hardware of the computer medium. { in'hir·ənt 'stȯr·ij }

inheritance [COMPUT SCI] A feature of object-oriented programming that allows a new class to be defined simply by stating how it differs from an existing class. { in'her·əd·əns }

inherited error [COMPUT SCI] The error existing in the data supplied at the beginning of a step in a step-by-step calculation as executed by a program. { in'her·əd·əd 'er·ər }

inhibit-gate [ELECTR] Gate circuit whose output is energized only when certain signals are present and other signals are not present at the inputs. { in'hib·ət¸gāt }

inhibiting input [ELECTR] A gate input which, if in its prescribed state, prevents any output which might otherwise occur. { in'hib·əd·iŋ 'in ¸půt }

inhibiting signal [ELECTR] A signal, which when entered into a specific circuit will prevent the circuit from exercising its normal function; for example, an inhibit signal fed into an AND gate will prevent the gate from yielding an output when all normal input signals are present. { in'hib·əd·iŋ ¸sig·nəl }

inhibit pulse [ELECTR] A drive pulse that tends to prevent flux reversal of a magnetic cell by certain specified drive pulses. { in'hib·ət ¸pəls }

initial condition *See* entry condition. { i'nish·əl kən'dish·ən }

initial condition mode *See* reset mode. { i'nish·əl kən'dish·ən ¸mōd }

initial graphics exchange specification [COMPUT SCI] A standard graphics file format for three-dimensional wire-frame models. Abbreviated IGES. { i¦nish·əl 'graf·iks iks¸chānj ¸spes·ə·fə'kā·shən }

initial instructions [COMPUT SCI] A routine stored in a computer to aid in placing a program in memory. Also known as initial orders. { i'nish·əl in'strək·shənz }

initial inverse voltage [ELECTR] Of a rectifier tube, the peak inverse anode voltage immediately following the conducting period. { i'nish·əl ¦in ¸vərs 'vōl·tij }

initialize [COMPUT SCI] **1.** To set counters, switches, and addresses to zero or other starting values at the beginning of, or at prescribed points in, a computer routine. **2.** To begin an operation, and more specifically, to adjust the environment to the required starting configuration. { i'nish·ə¸līz }

initial orders *See* initial instructions. { i'nish·əl 'ȯr·dərz }

Initial program load [COMPUT SCI] A routine, used in starting up a computer, that loads the operating system from a direct-access storage device, usually a disk or diskette, into the computer's main storage. Abbreviated IPL. { i'nish·əl 'prō·grəm ˌlōd }

Initial program load button *See* bootstrap button. { i'nish·əl 'prō·grəm ˌlōd ˌbət·ən }

Initial surge voltage [ELEC] A spike of voltage experienced when a noncompensated load is first connected to a generator. { i'nish·əl 'sərj ˌvōl·tij }

Initiate *See* trigger. { i'nish·ē,āt }

initiator [COMPUT SCI] A part of an operating system of a large computer that runs several jobs at the same time, setting up the job, monitoring its progress, and performing any necessary cleanup after the job's completion. { i'nish·ē,ād·ər }

injection [ELECTR] **1.** The method of applying a signal to an electronic circuit or device. **2.** The process of introducing electrons or holes into a semiconductor so that their total number exceeds the number present at thermal equilibrium. { in'jek·shən }

injection efficiency [ELECTR] A measure of the efficiency of a semiconductor junction when a forward bias is applied, equal to the current of injected minority carriers divided by the total current across the junction. { in'jek·shən ə,fish·ən·sē }

injection electroluminescence [ELECTR] Radiation resulting from recombination of minority charge carriers injected in a *pn* or *pin* junction that is biased in the forward direction. Also known as Lossev effect; recombination electroluminescence. { in'jek·shən i|lek·trō,lü·mə 'nes·əns }

injection grid [ELECTR] Grid introduced into a vacuum tube in such a way that it exercises control over the electron stream without causing interaction between the screen grid and control grid. { in'jek·shən ˌgrid }

injection locking [ELECTR] The capture or synchronization of a free-running oscillator by a weak injected signal at a frequency close to the natural oscillator frequency or to one of its subharmonics; used for frequency stabilization in IMPATT or magnetron microwave oscillators, gas-laser oscillators, and many other types of oscillators. { in'jek·shən ¦läk·iŋ }

injection luminescent diode [ELECTR] Gallium arsenide diode, operating in either the laser or the noncoherent mode, that can be used as a visible or near-infrared light source for triggering such devices as light-activated switches. { in'jek·shən ˌlü·mə¦nes·ənt 'dī,ōd }

injection signal [ENG ACOUS] The sawtooth frequency-modulated signal which is added to the first detector circuit for mixing with the incoming target signal. { in'jek·shən ˌsig·nəl }

injector [ELECTR] An electrode through which charge carriers (holes or electrons) are forced to enter the high-field region in a spacistor. { in'jek·tər }

ink bleed [COMPUT SCI] In character recognition, the capillary extension of ink beyond the original edges of a printed or handwritten character. { 'iŋk ˌblēd }

ink smudge [COMPUT SCI] In character recognition, the overflow of ink beyond the original edges of a printed or handwritten character. { 'iŋk ˌsməj }

ink squeezeout [COMPUT SCI] In character recognition, the overflow of ink from the stroke centerline to the edges of a printed or handwritten character. { 'iŋk 'skwēˌzaůt }

in-line coding [COMPUT SCI] Any group of instructions within the main body of a program. { 'in ¦līn 'kōd·iŋ }

in-line guns [ELECTR] An arrangement of three electron guns in a horizontal line; used in color picture tubes that have a slot mask in front of vertical color phosphor stripes. { 'in ¦līn 'gənz }

in-line procedure [COMPUT SCI] A short body of coding or instruction which accomplishes some purpose. { 'in ¦līn prə'sē·jər }

in-line processing [COMPUT SCI] The processing of data in random order, not subject to preliminary editing or sorting. { 'in ¦līn 'prä·ses·iŋ }

in-line subroutine [COMPUT SCI] A subroutine which is an integral part of a program. { 'in ¦līn 'səb·rü,tēn }

in-line tuning [ELECTR] Method of tuning the intermediate-frequency strip of a superheterodyne receiver in which all the intermediate-frequency amplifier stages are made resonant to the same frequency. { 'in ¦līn 'tün·iŋ }

in-phase and quadrature video [ELECTR] The pair of video signals produced in a radar receiver using two homodyne reception channels in which the reference signal iin one has shifted by ninety degrees of phase from the reference signal in the other; the process overcomes certain limiting conditions in the use of just one homodyne channel. { 'in ˌfāz ənd 'kwä·drə·chər 'vid·ē·ō }

in-phase component [ELEC] The component of the phasor representing an alternating current which is parallel to the phasor representing voltage. { 'in ˌfāz kəm'pō·nənt }

in-phase rejection *See* common-mode rejection. { 'in ˌfāz ri'jek·shən }

in-phase signal *See* common-mode signal. { 'in ˌfāz 'sig·nəl }

input [COMPUT SCI] The information that is delivered to a data-processing device from the external world, the process of delivering this data, or the equipment that performs this process. [ELECTR] **1.** The power or signal fed into an electrical or electronic device. **2.** The terminals to which the power or signal is applied. { 'inˌpůt }

input admittance [ELEC] The admittance measured across the input terminals of a four-terminal network with the output terminals short-circuited. { 'inˌpůt əd,mit·əns }

input area [COMPUT SCI] A section of internal storage reserved for storage of data or instructions received from an input unit such as cards or tape. Also known as input block; input storage. { 'in ˌpůt ˌer·ē·ə }

input capacitance [ELECTR] The short-circuited transfer capacitance that exists between the

input terminals and all other terminals of an electron tube (except the output terminal) connected together. { 'in,půt kə'pas·əd·ənz }

input data [COMPUT SCI] Data employed as input. { 'in,půt ,dad·ə }

input equipment [COMPUT SCI] **1.** The equipment used for transferring data and instructions into an automatic data-processing system. **2.** The equipment by which an operator transcribes original data and instructions to a medium that may be used in an automatic data-processing system. { 'in,půt i,kwip·mənt }

input gap [ELECTR] An interaction gap used to initiate a variation in an electron stream; in a velocity-modulated tube it is in the buncher resonator. { 'in,půt ,gap }

input impedance [ELEC] The impedance across the input terminals of a four-terminal network when the output terminals are short-circuited. { 'in,půt im,pēd·ənz }

input-limited [COMPUT SCI] Pertaining to a system or operation whose speed or efficiency depends mainly on the speed of input into the machine rather than the speed of the machine itself. { 'in ,půt ,lim·əd·əd }

input magazine [COMPUT SCI] A part of a card-handling device which supplies the cards to the processing portion of the machine. Also known as magazine. { 'in,půt ,mag·ə,zēn }

input/output [COMPUT SCI] Pertaining to all equipment and activity that transfers information into or out of a computer. Abbreviated I/O. { 'in ,půt 'aůt,půt }

input/output adapter [COMPUT SCI] A circuitry which allows input/output devices to be attached directly to the central processing unit. { 'in,půt 'aůt,půt ə,dap·tər }

input/output area [COMPUT SCI] A portion of computer memory that is reserved for accepting data from input devices and holding data for transfer to output devices. { 'in,půt 'aůt,půt ,er·ē·ə }

input/output bound [COMPUT SCI] Pertaining to a system or condition in which the time for input and output operation exceeds other operations. Also known as input/output limited. { 'in,půt 'aůt,půt ,baůnd }

input/output buffer [COMPUT SCI] An area of a computer memory used to temporarily store data and instructions transferred into and out of a computer, permitting several such transfers to take place simultaneously with processing of data. { 'in,půt 'aůt,půt ,bəf·ər }

input/output channel [COMPUT SCI] The physical link connecting the computer to an input device or to an output device. { 'in,půt 'aůt,půt ,chan·əl }

input/output controller [COMPUT SCI] An independent processor which provides the data paths between input and output devices and main memory. { 'in,půt 'aůt,půt kən,trōl·ər }

input/output control system [COMPUT SCI] A set of flexible routines that supervise the input and output operations of a computer at the detailed machine-language level. Abbreviated IOCS. { 'in,půt 'aůt,půt kən,trōl ,sis·təm }

input/output control unit [COMPUT SCI] The piece of hardware which controls the operation of one or more of a type of devices such as tape drives or disk drives; this unit is frequently an integral part of the input/output device itself. { 'in,půt 'aůt,půt kən'trōl ,yü·nət }

input/output device *See* peripheral device. { 'in ,půt 'aůt,půt di,vīs }

input/output generation [COMPUT SCI] A procedure involved in installing an operating system on a large computer in which addresses and attributes of peripheral equipment under the computer's control are described in a language that can be read by the operating system. Abbreviated IOGEN. { 'in,půt 'aůt,půt ,jen·ə,rā·shən }

input/output instruction [COMPUT SCI] An instruction in a computer program that causes transfer of data between peripheral devices and main memory, and enables the central processing unit to control the peripheral devices connected to it. { 'in,půt 'aůt,půt in,strək·shən }

input/output interrupt [COMPUT SCI] A technique by which the central processor needs only initiate an input/output operation and then handle other matters, while other units within the system carry out the rest of the operation. { 'in,půt 'aůt,půt 'int·ə,rəpt }

input/output interrupt identification [COMPUT SCI] The ascertainment of the device and channel taking part in the transfer of information into or out of a computer that causes a particular input/output interrupt, and of the status of the device and channel. { 'in,půt 'aůt,půt 'int·ə,rəpt ī,dent·ə·fə,kā·shən }

input/output interrupt indicator [COMPUT SCI] A device which registers an input/output interrupt associated with a particular input/output channel; it can be used in input/output interrupt identification. { 'in,půt 'aůt,půt 'int·ə,rəpt ,in·də ,kād·ər }

input/output library [COMPUT SCI] A set of programs which take over the job from the programmer of creating the required instructions to access the various peripheral devices. Also known as input/output routines. { 'in,půt 'aůt ,půt ,lī,brer·ē }

input/output limited *See* input/output bound. { 'in,půt 'aůt,půt ,lim·əd·əd }

input/output order [COMPUT SCI] A procedure of transferring data between main memory and peripheral devices which is assigned to and performed by an input/output controller. { 'in ,půt 'aůt,půt ,ór·dər }

input/output processor [COMPUT SCI] A hardware device or software processor whose sole function is to handle input and output operations. { 'in ,půt 'aůt,půt ,prā,ses·ər }

input/output referencing [COMPUT SCI] The use of symbolic names in a computer program to indicate data on input/output devices, the actual devices allocated to the program being determined when the program is executed. { 'in,půt 'aůt,půt ,ref·rən·siŋ }

input/output register [COMPUT SCI] Computer register that provides the transfer of information

from inputs to the central computer, or from it to output equipment. { 'in,pút 'aút,pút ,rėj·ə·stər }

input/output relation [SYS ENG] The relation between two vectors whose components are the inputs (excitations, stimuli) of a system and the outputs (responses) respectively. { 'in,pút 'aút ,pút ri,lā·shən }

input/output routines *See* input/output library. { 'in,pút 'aút,pút rü,tēnz }

input/output statement [COMPUT SCI] A statement in a computer language that summons data or stores data in a peripheral device. { 'in,pút 'aút,pút ,stāt·mənt }

input/output switching [COMPUT SCI] A technique in which a number of channels can connect input and output devices to a central processing unit; each device may be assigned to any available channel, so that several different channels may service a particular device during the execution of a program. { 'in,pút 'aút,pút ,swich·iŋ }

input/output traffic control [COMPUT SCI] The coordination, by both hardware and software facilities, of the actions of a central processing unit and the input, output, and storage devices under its control, in order to permit several input/output devices to operate simultaneously while the central processing unit is processing data. { 'in,pút 'aút,pút 'traf·ik kən,trōl }

input/output wedge [COMPUT SCI] The characteristic shape of a Kiviat graph of a system which is approaching complete input/output boundedness. { 'in,pút 'aút,pút ,wej }

input program *See* data entry program. { 'in,pút ,prō·grəm }

input record [COMPUT SCI] **1.** A record that is read from an input device into a computer memory during the performance of a program or routine. **2.** A record that has been stored in an input area and is ready to be processed. { 'in,pút ,rek·ərd }

input register [COMPUT SCI] A register that accepts input information from a computer at one speed and supplies the information to the central processing unit at another speed, usually much greater. { 'in,pút ,rej·ə·stər }

input resistance *See* transistor input resistance. { 'in,pút ri,zis·təns }

input resonator *See* buncher resonator. { 'in,pút 'rēz·ən,ād·ər }

input routine [COMPUT SCI] A routine which controls the loading and reading of programs, data, and other routines into a computer for storage or immediate use. Also known as loading routine. { 'in,pút rü,tēn }

input section [COMPUT SCI] The part of a program which controls the reading of data into a computer memory from external devices. { 'in,pút ,sek·shən }

input station [COMPUT SCI] A terminal in an in-plant communications system at which data can be entered into the system directly as events take place, enabling files to be immediately updated. { 'in,pút ,stā·shən }

input storage *See* input area. { 'in,pút ,stór·ij }

inquiry [COMPUT SCI] A request for the retrieval of a particular item or set of items from storage. { in'kwī·ə·rē }

inquiry and communications system [COMPUT SCI] A computer system in which centralized records are maintained with data transmitted to and from terminals at remote locations or in an in-plant system, and which immediately responds to inquiries from remote terminals. { in'kwī·ə·rē ən kə,myü·nə'kā·shənz ,sis·təm }

inquiry and subscriber display [COMPUT SCI] An inquiry display unit that is distant from its computer and communicates with it over wire lines. { in'kwī·ə·rē ən səb'skrīb·ər di,splā }

inquiry display terminal [COMPUT SCI] A cathode-ray-tube terminal which allows the user to query the computer through a keyboard, the answer appearing on the screen. { in'kwī·ə·rē di'splā ,tər·mən·əl }

inquiry station [COMPUT SCI] A remote terminal from which an inquiry may be sent to a computer over wire lines. { in'kwī·ə·rē ,stā·shən }

inquiry unit [COMPUT SCI] Any terminal which enables a user to query a computer and get a hard-copy answer. { in'kwī·ə·rē ,yü·nət }

inscribe [COMPUT SCI] To rewrite data on a document in a form which can be read by an optical or magnetic ink character recognition machine. { in'skrīb }

insensitive time *See* dead time. { in'sen·sə·tiv ,tīm }

insertion gain [ELECTR] The ratio of the power delivered to a part of the system following insertion of an amplifier, to the power delivered to that same part before insertion of the amplifier; usually expressed in decibels. { in'sər·shən ,gān }

insertion loss [ELECTR] The loss in load power due to the insertion of a component or device at some point in a transmission system; generally expressed as the ratio in decibels of the power received at the load before insertion of the apparatus, to the power received at the load after insertion. { in'sər·shən ,lòs }

insertion switch [COMPUT SCI] Process by which information is inserted into the computer by an operator who manually operates switches. { in'sər·shən ,swich }

instability [CONT SYS] A condition of a control system in which excessive positive feedback causes persistent, unwanted oscillations in the output of the system. { ,in·stə'bil·əd·ē }

installation processing control [COMPUT SCI] A system that automatically schedules the processing of jobs by a computer installation, in order to minimize waiting time and time taken to prepare equipment for operation. { ,in·stə'lā·shən 'präs ,es·iŋ kən,trōl }

installation specification [COMPUT SCI] The criteria defined by a computer manufacturer for specifying correct physical installation. { ,in·stə'lā·shən ,spes·ə·fə,kā·shən }

installation tape number [COMPUT SCI] A number that is permanently assigned to a reel of

magnetic tape to identify it. { ˌin·stəˈlā·shən ˈtāpˌnam·bər }

installed capacity [ELEC] The maximum runoff of a hydroelectric facility that can be constantly maintained and utilized by equipment. { inˈstȯld kəˈpas·əd·ē }

install program [COMPUT SCI] A computer program that adapts a software package for use on a particular computer system. { inˈstȯl ˌprō·gram }

instance variable [COMPUT SCI] The data in an object of an object-oriented program. { ˈin·stəns ˌver·ē·ə·bəl }

instantaneous automatic gain control [ELECTR] Portion of a radar system that automatically adjusts the gain of an amplifier for each pulse to obtain a substantially constant output-pulse peak amplitude with different input-pulse peak amplitudes; the circuit is fast enough to act during the time a pulse is passing through the amplifier. { ˌin·stənˈtā·nē·əs ˌȯd·əˌmad·ik ˈgān kənˌtrōl }

instantaneous bandwidth [COMMUN] A term in radar for the modulation bandwidth of the signal being used, so as not to be confused with the radar's agility bandwidth, or its approved operating bandwidth. { ˌin·stənˈtā·nē·əs ˈbandˌwidth }

instantaneous carrying current [ELEC] The maximum value of current which a switch, circuit breaker, or similar apparatus can carry instantaneously. { ˌin·stənˈtā·nē·əs ˈkar·ē·iŋ ˌkə·rənt }

instantaneous companding [ELECTR] Companding in which the effective gain variations are made in response to instantaneous values of the signal wave. { ˌin·stənˈtā·nē·əs kəmˈpan·diŋ }

instantaneous description [COMPUT SCI] For a Turing machine, the set of machine conditions at a given point in the computation, including the contents of the tape, the position of the read-write head on the tape, and the internal state of the machine. { ˌin·stənˈtā·nē·əs diˈskrip·shən }

instantaneous effects [COMMUN] Impairment of telephone or telegraph transmission caused by instantaneous changes in phase or amplitude of the wave in a transmission line. { ˌin·stənˈtā·nē·əs iˈfekts }

instantaneous frequency [COMMUN] The time rate of change of the angle of an angle-modulated wave. { ˌin·stənˈtā·nē·əs ˈfrē·kwən·sē }

instantaneous frequency-indicating receiver [ELECTR] A radio receiver with a digital, cathode-ray, or other display that shows the frequency of a signal at the instant it is picked up anywhere in the band covered by the receiver. { ˌin·stənˈtā·nē·əs ˈfrē·kwən·sē ˌin·dəˌkād·iŋ riˈsē·vər }

instantaneous power [ELEC] The product of the instantaneous voltage and the instantaneous current for a circuit or component. { ˌin·stənˈtā·nē·əs ˈpau·ər }

instantaneous recording [ENG ACOUS] A recording intended for direct reproduction without further processing. { ˌin·stənˈtā·nē·əs riˈkȯrd·iŋ }

instantaneous sample [COMMUN] One of a sequence of instantaneous values of a wave taken at regular intervals. { ˌin·stənˈtā·nē·əs ˈsam·pəl }

instantiation [COMPUT SCI] **1.** An external declaration or a reference to another program or subprogram in the Ada programming language. **2.** The deduction of omitted values in a set of data from the known values. **3.** The creation of an object of a specific class in an object-oriented program. { inˌstan·chēˈā·shən }

instant-on switch [ELECTR] A switch that applies a reduced filament voltage to all tubes in a television receiver continuously, so the picture appears almost instantaneously after the set is turned on. { ˈin·stənt ˈȯn ˌswich }

instant replay See video replay. { ˈin·stənt ˈrēˌplā }

instruction [COMPUT SCI] A pattern of digits which signifies to a computer that a particular operation is to be performed and which may also indicate the operands (or the locations of operands) to be operated on. { inˈstrək·shən }

instruction address [COMPUT SCI] The address of the storage location in which a given instruction is stored. { inˈstrək·shən əˈdres }

instruction address register [COMPUT SCI] A special storage location, forming part of the program controller, in which addresses of instructions are stored in order to control their sequential retrieval from memory during the execution of a program. { inˈstrək·shən əˌdres ˈrej·ə·stər }

instruction area [COMPUT SCI] A section of storage used for storing program instructions. { inˈstrək·shən ˌer·ē·ə }

instruction code [COMPUT SCI] That part of an instruction which distinguishes it from all other instructions and specifies the action to be performed. { inˈstrək·shən ˌkōd }

instruction constant [COMPUT SCI] A dummy instruction of the type K = I, where K is irrelevant to the program. { inˈstrək·shən ˌkän·stənt }

instruction counter [COMPUT SCI] A counter that indicates the location of the next computer instruction to be interpreted. Also known as location counter; program counter; sequence counter. { inˈstrək·shən ˌkaunt·ər }

instruction cycle [COMPUT SCI] The steps involved in carrying out an instruction. { inˈstrək·shən ˌsī·kəl }

instruction format [COMPUT SCI] Any rule which assigns various functions to the various digits of an instruction. { inˈstrək·shən ˌfȯrˌmat }

instruction length [COMPUT SCI] The number of bits or bytes (eight bits per byte) which defines an instruction. { inˈstrək·shən ˌleŋkth }

instruction lookahead [COMPUT SCI] A technique for speeding up the process of fetching and decoding instructions in a computer program, and of computing addresses of required operands and fetching them, in which the control unit fetches any unexecuted instructions on hand, to the extent this is feasible. Also known as fetch ahead. { inˈstrək·shən ˈlu̇kˌəˌhed }

instruction mix [COMPUT SCI] The proportion of various types of instructions that appear in a particular computer program, or in a benchmark

representing a class of programs. [in'strək·shən ˌmiks]

instruction modification [COMPUT SCI] A change, carried out by the program, in an instruction so that, upon being repeated, this instruction will perform a different operation. [in'strək·shən ˌmäd·ə·fə'kā·shən]

instruction pointer [COMPUT SCI] **1.** A component of a task descriptor that designates the next instruction to be executed by the task. **2.** An element of the control component of the stack model of block structure execution, which points to the current instruction. [in'strək·shən ˌpȯint·ər]

instruction register [COMPUT SCI] A hardware element that receives and holds an instruction as it is extracted from memory; the register either contains or is connected to circuits that interpret the instruction (or discover its meaning). Also known as current-instruction register. [in'strək·shən ˌrej·ə·stər]

instruction repertory *See* instruction set. [in'strək·shən ˌrep·ə,tȯr·ē]

instruction set [COMPUT SCI] **1.** The set of instructions which a computing or data-processing system is capable of performing. **2.** The set of instructions which an automatic coding system assembles. **3.** Also known as instruction repertory. [in'strək·shən ˌset]

instruction time [COMPUT SCI] The time required to carry out an instruction having a specified number of addresses in a particular computer. [in'strək·shən ˌtīm]

instruction transfer [COMPUT SCI] An instruction which transfers control to one or another subprogram, depending upon the value of some operation. [in'strək·shən ˌtranz·fər]

instruction word [COMPUT SCI] A computer word containing an instruction rather than data. Also known as coding line. [in'strək·shən ˌwərd]

instrumentation amplifier [ELECTR] An amplifier that accepts a voltage signal as an input and produces a linearly scaled version of this signal at the output; it is a closed-loop fixed-gain amplifier, usually differential, and has high input impedance, low drift, and high common-mode rejection over a wide range of frequencies. [ˌin·strə·men'tā·shən 'am·plə,fī·ər]

instrumented range [ELECTR] In radar, the distance from which an echo might be received just before the subsequent pulse is transmitted; sometimes called unambiguous range. Echoes from targets at greater ranges are liable to be associated with the subsequent pulse and thought to be coming from a target at a much shorter range. ['in·strəˌmən·təd ˌrānj]

instrument multiplier [ELEC] A highly accurate resistor used in series with a voltmeter to extend its voltage range. Also known as voltage multiplier; voltage-range multiplier. ['in·strə·mənt 'məl·tə,plī·ər]

instrument resistor [ELEC] A high-accuracy, four-terminal resistor used to bypass the major portion of currents around the low-current elements of an instrument, such as a direct-current ammeter. ['in·strə·mənt ri,zis·tər]

instrument shunt [ELEC] A resistor designed to be connected in parallel with an ammeter to extend its current range. ['in·strə·mənt ˌshənt]

instrument transformer [ELEC] A transformer that transfers primary current, voltage, or phase values to the secondary circuit with sufficient accuracy to permit connecting an instrument to the secondary rather than the primary; used so only low currents or low voltages are brought to the instrument. ['in·strə·mənt tranz,fȯr·mər]

instrument-type relay [ELEC] A relay constructed like a meter, with one adjustable contact mounted on the scale and the other contact mounted on the pointer. Also known as contact-making meter. ['in·strə·mənt ˌtīp 'rē,lā]

insulated [ELEC] Separated from other conducting surfaces by a nonconducting material. ['in·sə,lād·əd]

insulated conductor [ELEC] A conductor surrounded by insulation to prevent current leakage or short circuits. Also known as insulated wire. ['in·sə,lād·əd kən'dək·tər]

insulated-gate bipolar transistor [ELECTR] A power semiconductor device that combines low forward voltage drop, gate-controlled turnoff, and high switching speed. It structurally resembles a vertically diffused MOSFET, featuring a double diffusion of a *p*-type region and an *n*-type region, but differs from the MOSFET in the use of a *p*+ substrate layer (in the case of an *n*-channel device) for the drain. The effect is to change the transistor into a bipolar device, as this *p*-type region injects holes into the *n*-type drift region. Abbreviated IGBT. [ˌin·sə,lād·əd,gāt bī,pō·lər tran'zis·tər]

insulated-gate field-effect transistor *See* metal oxide semiconductor field-effect transistor. ['in·sə,lād·əd ˌgāt ˌfēld i,fekt tran'zis·tər]

insulated-return power system [ELEC] A system for distributing electric power to trains or other vehicles, in which both the outgoing and return conductors are insulated, in contrast to a track-return system. ['in·sə,lād·əd ri|tərn 'paü·ər ˌsis·təm]

insulated-substrate monolithic circuit [ELECTR] Integrated circuit which may be either an all-diffused device or a compatible structure so constructed that the components within the silicon substrate are insulated from one another by a layer of silicon dioxide, instead of reverse-biased *pn* junctions used for isolation in other techniques. ['in·sə,lād·əd ˌsəb,strāt ˌmän·ə ˌlith·ik 'sər·kət]

insulated wire *See* insulated conductor. { 'in·sə ˌlād·əd 'wīr }

insulating strength [ELEC] Measure of the ability of an insulating material to withstand electric stress without breakdown; it is defined as the voltage per unit thickness necessary to initiate a disruptive discharge; usually measured in volts per centimeter. { 'in·səˌlād·iŋ ˌstreŋkth }

insulation [ELEC] A material having high electrical resistivity and therefore suitable for separating adjacent conductors in an electric circuit or preventing possible future contact between conductors. Also known as electrical insulation. { ˌin·səˈlā·shən }

insulation coordination [ELEC] Steps taken to ensure that electric equipment is not damaged by overvoltages and that flashovers are localized in regions where no damage results from them. { ˌin·səˈlā·shən kō'ȯrd·ənˌā·shən }

insulation protection [ELEC] Use of devices to protect insulators of power transmission lines from damage by heavy arcs. { ˌin·səˈlā·shən prə ¦tek·shən }

insulation resistance [ELEC] The electrical resistance between two conductors separated by an insulating material. { ˌin·səˈlā·shən ri¦zis·təns }

insulator [ELEC] A device having high electrical resistance and used for supporting or separating conductors to prevent undesired flow of current from them to other objects. Also known as electrical insulator. { 'in·səˌlād·ər }

insulator arc-over [ELEC] Discharge of power current in the form of an arc, following a surface discharge over an insulator. { 'in·səˌlād·ər 'ärk ˌō·vər }

integer constant [COMPUT SCI] A constant that uses the values 0, 1, . . . , 9 with no decimal point in FORTRAN. { 'int·ə·jər ¦kän·stənt }

integer data type [COMPUT SCI] A scalar date type which is used to represent whole numbers, that is, values without fractional parts. { 'int·ə·jər 'dad·ə ˌtāp }

integer programming [SYS ENG] A series of procedures used in operations research to find maxima or minima of a function subject to one or more constraints, including one which requires that the values of some or all of the variables be whole numbers. { 'int·ə·jər 'prōˌgram·iŋ }

integer variable [COMPUT SCI] A variable in FORTRAN whose first character is normally I, J, K, L, M, or N. { 'int·ə·jər 'ver·ē·ə·bəl }

integral action [CONT SYS] A control action in which the rate of change of the correcting force is proportional to the deviation. { 'int·ə·grəl ˌak·shən }

integral compensation [CONT SYS] Use of a compensator whose output changes at a rate proportional to its input. { 'int·ə·grəl ˌkäm·pənˈsā·shən }

integral control [CONT SYS] Use of a control system in which the control signal changes at a rate proportional to the error signal. { 'int·ə·grəl kənˌtrōl }

integral discriminator [ELECTR] A circuit which accepts only pulses greater than a certain minimum height. { 'int·ə·grəl di'skrim·əˌnād·ər }

integral-mode controller [CONT SYS] A controller which produces a control signal proportional to the integral of the error signal. { 'int·ə·grəl ¦mōd kənˌtrōl·ər }

integral modem [COMMUN] A modem built directly into a machine to enable it to communicate over a telephone line. Also known as internal modem. { 'int·ə·grəl ¦mōˌdem }

integral network [CONT SYS] A compensating network which produces high gain at low input frequencies and low gain at high frequencies, and is therefore useful in achieving low steady-state errors. Also known as lagging network; lag network. { 'int·ə·grəl 'netˌwərk }

integral quantum Hall effect [ELECTR] The version of the quantum Hall effect in which the Hall resistance becomes precisely equal to $(h/e^2)/n$, where h is Planck's constant, e is the electronic charge, and n is an integer. { 'int·ə·grəl ¦kwän·təm 'hȯl iˌfekt }

integral square error [CONT SYS] A measure of system performance formed by integrating the square of the system error over a fixed interval of time; this performance measure and its generalizations are frequently used in linear optimal control and estimation theory. { 'int·ə·grəl ¦skwer ˌer·ər }

integrated circuit [ELECTR] An interconnected array of active and passive elements integrated with a single semiconductor substrate or deposited on the substrate by a continuous series of compatible processes, and capable of performing at least one complete electronic circuit function. Abbreviated IC. Also known as integrated semiconductor. { 'int·əˌgrād·əd 'sər·kət }

integrated-circuit capacitor [ELECTR] A capacitor that can be produced in a silicon substrate by conventional semiconductor production processes. { 'int·əˌgrād·əd ¦sərkət kə'pas·əd·ər }

integrated-circuit filter [ELECTR] An electronic filter implemented as an integrated circuit, rather than by interconnecting discrete electrical components. { ¦int·iˌgrād·əd 'sər·kət ˌfil·tər }

integrated-circuit memory *See* semiconductor memory. { 'int·əˌgrād·əd ¦sər·kət 'mem·rē }

integrated-circuit resistor [ELECTR] A resistor that can be produced in or on an integrated-circuit substrate as part of the manufacturing process. { 'int·əˌgrād·əd ¦sərkət ri'zis·tər }

integrated communications system [COMMUN] Communications system on either a unilateral or joint basis in which a message can be filed at any communications center in that system and be delivered to the addressee by any other appropriate communications center in that system without reprocessing enroute. { 'int·əˌgrād·əd kəˌmyü·nəˈkā·shənz ˌsis·təm }

integrated console [COMMUN] Computer control console that is capable of controlling the operation of the switching center equipment of

an integrated communications system. { 'int·ə ˌgrād·əd 'kän,sōl }

integrated data dictionary [COMPUT SCI] An index or catalog of information about a data base that is physically and logically integrated into the data base. { 'in·tə,grād·əd 'dad·ə 'dik·shə,ner·ē }

integrated data processing [COMPUT SCI] Data processing that has been organized and carried out as a whole, so that intermediate outputs may serve as inputs for subsequent processing with no human copying required. Abbreviated IDP. { 'in·tə,grād·əd ¦dad·ə 'prä·ses·iŋ }

integrated data retrieval system [COMPUT SCI] A section of a data-processing system that provides facilities for simultaneous operation of several video-data interrogations in a single line and performs required communications with the rest of the system; it provides storage and retrieval of both data subsystems and files and standard formats for data representation. { 'in·tə,grād·əd ¦dad·ə ri'trē·vəl ˌsis·təm }

integrated electronics [ELECTR] A generic term for that portion of electronic art and technology in which the interdependence of material, device, circuit, and system-design consideration is especially significant; more specifically, that portion of the art dealing with integrated circuits. { 'in·tə,grād·əd i,lek'trän·iks }

integrated information processing [COMPUT SCI] System of computers and peripheral systems arranged and coordinated to work concurrently or independently on different problems at the same time. { 'in·tə,grād·əd ˌin·fər'mā·shən ˌprä·ses·iŋ }

integrated information system [COMMUN] An expansion of a basic information system achieved through system design of an improved or broader capability by functionally or technically relating two or more information systems, or by incorporating a portion of the functional or technical elements of one information system into another. { 'in·tə,grād·əd ˌin·fər'mā·shən ˌsis·təm }

integrated injection logic [ELECTR] Integrated-circuit logic that uses a simple and compact bipolar transistor gate structure which makes possible large-scale integration on silicon for logic arrays, memories, watch circuits, and various other analog and digital applications. Abbreviated I^2L. Also known as merged-transistor logic. { 'in·tə ˌgrād·əd in'jek·shən 'läj·ik }

integrated optics [OPTICS] A thin-film device containing tiny lenses, prisms, and switches to transmit very thin laser beams, and serving the same purposes as the manipulation of electrons in thin-film devices of integrated electronics. { 'in·tə,grād·əd 'äp·tiks }

integrated semiconductor *See* integrated circuit. { 'in·tə,grād·əd ¦sem·i·kən¦dək·tər }

integrated services digital network [COMMUN] A public end-to-end digital communications network which has capabilities of signaling, switching, and transport over facilities such as wire pairs, coaxial cables, optical fibers, microwave radio, and satellites, and which supports a wide range of services, such as voice, data, video, facsimile, and music, over standard interfaces. Abbreviated ISDN. { 'in·tə,grād·əd ¦sər·vəs·əz 'dij·əd·əl 'net,wərk }

integrated software [COMPUT SCI] **1.** A collection of computer programs designed to work together to handle an application, either by passing data from one to another or as components of a single system. **2.** A collection of computer programs that work as a unit with a unified command structure to handle several applications, such as word processing, spread sheets, data-base management, graphics, and data communications. { 'in·tə,grād·əd 'sȯft,wer }

integrated thermionic circuit [ELECTR] A circuit fabricated from subminiature thin-film metal patterns on two planar substrates separated by an evacuated space about 1 millimeter in thickness to form miniature planar, thermionic, vacuum-tube devices, with densities approaching those of conventional integrated circuits. { 'in·tə,grād·əd ¦thər·mē¦än·ik 'sər·kət }

integrating amplifier [ELECTR] An operational amplifier with a shunt capacitor such that mathematically the waveform at the output is the integral (usually over time) of the input. { 'int·ə ˌgrād·iŋ 'am·plə,fī·ər }

integrating detector [ELECTR] A frequency-modulation detector in which a frequency-modulated wave is converted to an intermediate-frequency pulse-rate modulated wave, from which the original modulating signal can be recovered by use of an integrator. { 'int·ə ˌgrād·iŋ di'tek·tər }

integrating filter [ELECTR] A filter in which successive pulses of applied voltage cause cumulative buildup of charge and voltage on an output capacitor. { 'int·ə,grād·iŋ 'fil·tər }

integrating frequency meter [ENG] An instrument that measures the total number of cycles through which the alternating voltage of an electric power system has passed in a given period of time, enabling this total to be compared with the number of cycles that would have elapsed if the prescribed frequency had been maintained. Also known as master frequency meter. { 'int·ə,grād·iŋ 'frē·kwən·sē ˌmēd·ər }

integrating galvanometer [ENG] A modification of the d'Arsonval galvanometer which measures the integral of current over time; it is designed to be able to measure changes of flux in an exploring coil which last over periods of several minutes. { 'int·ə,grād·iŋ ˌgal·və'näm·əd·ər }

integrating meter [ENG] An instrument that totalizes electric energy or some other quantity consumed over a period of time. { 'int·ə,grād·iŋ 'mēd·ər }

integrating network [ELECTR] A circuit or network whose output waveform is the time integral of its input waveform. Also known as integrator. { 'int·ə,grād·iŋ 'net,wərk }

integration [SYS ENG] The arrangement of components in a system so that they function together in an efficient and logical way. { ˌint·ə'grā·shən }

integration test [COMPUT SCI] A stage in testing a computer system in which a collection of modules in the system is tested as a group. { ˌintəˈgrā·shən ˌtest }

integrator [ELECTR] **1.** A computer device that approximates the mathematical process of integration. **2.** *See* integrating network. { ˈintəˌgrād·ər }

integrity [COMPUT SCI] Property of data which can be recovered in the event of its destruction through failure of the recording medium, user carelessness, program malfunction, or other mishap. { inˈteg·rəd·ē }

intelligence [COMMUN] Data, information, or messages that are to be transmitted. { inˈtel·ə·jəns }

intelligent agent *See* knowbot. { inˈtel·ə·jənt ˈā·jənt }

intelligent cable [COMMUN] A multiline communications cable that is equipped with a microprocessor to analyze or convert signals. { inˈtel·ə·jənt ˈkā·bəl }

intelligent controller [COMPUT SCI] A peripheral control unit whose operation is controlled by a built-in microprocessor. { inˈtel·ə·jənt kənˈtrō·lər }

intelligent database [COMPUT SCI] **1.** A database that can respond to queries in a high-level, interactive language. **2.** A database that can store validation criteria with each item of data, so that all programs entering or updating the data must conform to these criteria. { inˈtel·ə·jənt ˈdadəˌbās }

intelligent machine [COMPUT SCI] A machine that uses sensors to monitor the environment and thereby adjust its actions to accomplish specific tasks in the face of uncertainty and variability. { inˈtel·ə·jənt məˈshēn }

intelligent robot [CONT SYS] A robot that functions as an intelligent machine, that is, it can be programmed to take actions or make choices based on input from sensors. { inˈtel·ə·jənt ˈrōˌbät }

intelligent sensor *See* smart sensor. { inˈtel·ə·jənt ˈsen·sər }

intelligent terminal [COMPUT SCI] A computer input/output device with its own memory and logic circuits which can perform certain operations normally carried out by the computer. Also known as smart terminal. { inˈtel·ə·jənt ˈtər·mən·əl }

intelligent work station [COMPUT SCI] A work station that has an intelligent terminal to carry out a variety of functions independently. { inˈtel·ə·jənt ˈwərk ˌstā·shən }

intelligibility [COMMUN] The percentage of speech units understood correctly by a listener in a communications system; customarily used for regular messages where the context aids the listener, in distinction to articulation. Also known as speech intelligibility. { inˌtel·ə·jəˈbil·əd·ē }

intelligible crosstalk [COMMUN] Crosstalk which is sufficiently understandable under pertinent circuit and room noise conditions that meaningful information can be obtained by more sensitive listeners. { inˈtel·ə·jə·bəl ˈkrôsˌtȯk }

Intelsat [COMMUN] A satellite network, formerly under international control, used for global communication by more than 100 countries; the system uses geostationary satellites over the Atlantic, Pacific, and Indian oceans and highly directional antennas at earth stations. Derived from International Telecommunications Satellite. { inˈtelˌsat }

intensifier electrode [ELECTR] An electrode used to increase the velocity of electrons in a beam near the end of their trajectory, after deflection of the beam. Also known as post-accelerating electrode; post-deflection accelerating electrode. { inˈten·səˌfī·ər iˈlekˌtrōd }

intensifier image orthicon [ELECTR] An image orthicon combined with an image intensifier that amplifies the electron stream originating at the photocathode before it strikes the target. { inˈten·səˌfī·ər ˈim·ij ˈȯr·thəˌkän }

intensity control *See* brightness control. { inˈten·səd·ē kənˌtrōl }

intensity modulation [ELECTR] Modulation of electron beam intensity in a cathode-ray tube in accordance with the magnitude of the received signal. { inˈten·səd·ē ˌmäj·əˈlā·shən }

interaction space [ELECTR] A region of an electron tube in which electrons interact with an alternating electromagnetic field. { ˈin·təˈrak·shən ˌspās }

interactive graphical input [COMPUT SCI] Information which is delivered to a computer by using hand-held devices, such as writing styli used with electronic tablets and light-pens used with cathode-ray tube displays, to sketch a problem description in an on-line interactive mode in which the computer acts as a drafting assistant with unusual powers, such as converting rough freehand motions of a pen or stylus to accurate picture elements. { ˈin·təˈrak·tiv ˈgraf·ə·kəl ˈinˌpůt }

interactive information system [COMPUT SCI] An information system in which the user communicates with the computing facility through a terminal and receives rapid responses which can be used to prepare the next input. { ˈin·təˈrak·tiv ˌin·fərˈmā·shən ˌsis·təm }

interactive language [COMPUT SCI] A programming language designed to operate in an environment in which the user and computer communicate as transactions are being processed. { ˈin·təˈrak·tiv ˈlaŋ·gwij }

interactive processing [COMPUT SCI] Computer processing in which the user can modify the operation appropriately while observing results at critical steps. { ˈin·təˈrak·tiv ˈprä·ses·iŋ }

interactive television [COMMUN] A form of television in which the content is personalized and the viewer can control its various parameters. { ˈin·təˈrak·tiv ˈtel·əˌvizh·ən }

interactive terminal [COMPUT SCI] A computer terminal designed for two-way communication between operator and computer. { ˈin·təˈrak·tiv ˈtər·mən·əl }

interbase current [ELECTR] The current that flows from one base connection of a junction tetrode

transistor to the other, through the base region. { 'in·tər,bās 'kə·rənt }

interblock [COMPUT SCI] A device or system that prevents one part of a computing system from interfering with another. { 'in·tər,bläk }

interblock gap [COMPUT SCI] A space separating two blocks of data on a magnetic tape. { 'in·tər ,bläk ,gap }

intercarrier channel [COMMUN] A carrier telegraph channel in the available frequency spectrum between carrier telephone channels. { ¦in·tər'kar·ē·ər ,chan·əl }

intercarrier noise suppression [ELECTR] Means of suppressing the noise resulting from increased gain when a high-gain receiver with automatic volume control is tuned between stations; the suppression circuit automatically blocks the audio-frequency input of the receiver when no signal exists at the second detector. Also known as interstation noise suppression. { ¦in·tər'kar·ē·ər 'nóiz sə,presh·ən }

intercarrier sound system [ELECTR] An analog television receiver arrangement in which the television picture carrier and the associated sound carrier are amplified together by the video intermediate-frequency amplifier and passed through the second detector, to give the conventional video signal plus a frequency-modulated sound signal whose center frequency is the 4.5 megahertz difference between the two carrier frequencies. Abbreviated ICS system. { ¦in·tər'kar·ē·ər 'saund ,sis·təm }

intercept call [COMMUN] In telephone practice, routing of a call placed to a disconnected or nonexisting telephone number, to an operator; or to a machine answering device, or to a tone. { ¦in·tər·sept ,ól }

interception [COMMUN] Tapping or tuning in to a telephone or radio message not intended for the listener. { ,in·tər'sep·shən }

intercept station [COMMUN] Provides service for subscribers whereby calls to disconnected stations or dead lines are either routed to an intercept operator for explanation, or the calling party receives a distinctive tone that informs the party that he has made such a call has been made. { 'in·tər,sept ,stā·shən }

intercept tape [COMMUN] A tape used for temporary storage of messages for trunk channels and tributary stations that are having equipment or circuit trouble. { 'in·tər,sept ,tāp }

intercept trunk [COMMUN] Trunk to which a call for a vacant number, a changed number, or a line out of order is connected for action by an operator. { 'in·tər,sept ,trəŋk }

interchange [ELEC] The current flowing into or out of a power system which is interconnected with one or more other power systems. { 'in·tər ,chānj }

interchangeability [ENG] The ability to replace the components, parts, or equipment of one manufacturer with those of another, without losing function or suitability. { ,in·tər ,chānj·ə'bil·əd·ē }

interchannel crosstalk [COMMUN] Crosstalk between channels in a multiplex system. { ¦in·tər ¦chan·əl 'krȯs,tȯk }

intercom *See* intercommunicating system. { 'in·tər,käm }

intercommunicating system [COMMUN] **1.** A telephone system providing direct communication between telephones on the same premises. **2.** A two-way communication system having a microphone and loudspeaker at each station and providing communication within a limited area. **3.** Also known as intercom. { ¦in·tər·kə'myü·nə,kād·iŋ ,sis·təm }

interconnected multiple processor [COMPUT SCI] A collection of computers that are physically separated but linked by communication channels to handle distributed data processing. { ,in·tər·kə'nek·təd 'məl·tə·pəl 'präs,es·ər }

interconnection [ELEC] A link between power systems enabling them to draw on one another's reserves in time of need and to take advantage of energy cost differentials resulting from such factors as load diversity, seasonal conditions, time-zone differences, and shared investment in larger generating units. { ¦in·tər·kə'nek·shən }

interconversion [COMMUN] Changing the representation of information from one code to another, as from six-bit to ASCII. { ¦in·tər·kən'vər·zhən }

interdigital magnetron [ELECTR] Magnetron having axial anode segments around the cathode, alternate segments being connected together at one end, remaining segments connected together at the opposite end. { ,in·tər'dij·əd·əl 'mag·nə,trän }

interdigital structure [ELECTR] A structure in which the length of the region between two electrodes is increased by an interlocking-finger design for metallization of the electrodes. Also known as interdigitated structure. { ,in·tər'dij·əd·əl ,strək·chər }

interdigital transducer [ELECTR] Two interlocking comb-shaped metallic patterns applied to a piezoelectric substrate such as quartz or lithium niobate, used for converting microwave voltages to surface acoustic waves, or vice versa. { ,in·tər'dij·əd·əl tranz'dü·sər }

interdigitated structure *See* interdigital structure. { ,in·tər'dij·ə,tād·əd ,strək·chər }

interelectrode capacitance [ELECTR] The capacitance between one electrode of an electron tube and the next electrode on the anode side. Also known as direct interelectrode capacitance. { ,in·tər·i'lek,trōd kə'pas·əd·əns }

interelectrode transit time [ELECTR] Time required for an electron to traverse the distance between the two electrodes. { ,in·tər·i'lek,trōd 'tran·zət ,tīm }

interface [COMPUT SCI] **1.** Some form of electronic device that enables one piece of gear to communicate with or control another. **2.** A device linking two otherwise incompatible devices, such as an editing terminal of one manufacturer to typesetter of another. { 'in·tər,fās }

interface adapter [COMMUN] A device that connects a terminal or computer to a network. { 'in·tər,fās ə,dap·tər }

interface card [COMPUT SCI] A card containing circuits that allow a device to interface with other devices. { 'in·tər,fās ,kärd }

interface connection *See* feedthrough. { 'in·tər ,fās kə,nek·shən }

interface control module [COMPUT SCI] Relocatable modularized compiler allowing for efficient operation and easy maintenance. { 'in·tər,fās kən'trōl ,mäj·ül }

interfacial polarization *See* space-charge polarization. { 'in·tər,fā·shəl ,pō·lə·rə'zā·shən }

interfacility transfer trunk [COMMUN] Trunk interconnecting switching centers of two different facilities. { ,in·tər·fə'sil·əd·ē 'tranz·fər ,trəŋk }

interference [COMMUN] Any undesired energy that tends to interfere with the reception of desired signals. Also known as electrical interference; radio interference. { ,in·tər'fir·əns }

interference analyzer [ELECTR] An instrument that discloses the frequency and amplitude of unwanted input. { ,in·tər'fir·əns ¦an·ə,līz·ər }

interference blanker [ELECTR] Device that permits simultaneous operation of two or more pieces of radio or radar equipment without confusion of intelligence, or that suppresses undesired signals when used with a single receiver. { ,in·tər'fir·əns ¦blaŋ·kər }

interference fading [COMMUN] Fading of the signal produced by different wave components traveling slightly different paths in arriving at the receiver (often termed multipath). { ,in·tər'fir·əns ,fād·iŋ }

interference filter [ELECTR] **1.** A filter used to attenuate artificial interference signals entering a receiver through its power line. **2.** A filter used to attenuate unwanted carrier-frequency signals in the tuned circuits of a receiver. [OPTICS] An optical filter in which the wavelengths that are not transmitted are removed by interference phenomena rather then by absorption or scattering. { ,in·tər'fir·əns ¦fil·tər }

interference pattern [ELECTR] Pattern produced on a radar display by undesired signals. Also, the vertical coverage pattern of a radar antenna resulting from the interference of the direct-path and earth-reflected path signals. { ,in·tər'fir·əns ¦pad·ərn }

interference prediction [ELECTR] Process of estimating the interference level of a particular equipment as a function of its future electromagnetic environment. { ,in·tər'fir·əns prə'dik·shən }

interference reduction [ELECTR] Reduction of interference from such causes as power lines and equipment, radio transmitters, and lightning, usually through the use of electric filters. Also known as interference suppression. { ,in·tər'fir·əns ri'dək·shən }

interference region [COMMUN] That region in space in which interference between wave trains occurs; in microwave propagation, it refers to the region bounded by the ray path and the surface of the earth which is above the radio horizon. { ,in·tər'fir·əns ,rē·jən }

Interference rejection [ELECTR] Use of a filter to reject (to bypass to ground) unwanted input. { ,in·tər'fir·əns ri'jek·shən }

Interference source suppression [ELECTR] Techniques applied at or near the source to reduce its emission of undesired signals. { ,in·tər'fir·əns 'sōrs sə,presh·ən }

Interference spectrum [ELECTR] Frequency distribution of the jamming interference in the propagation medium external to the receiver. { ,in·tər'fir·əns ¦spek·trəm }

Interference suppression *See* interference reduction. { ,in·tər'fir·əns sə'presh·ən }

Interference wave [COMMUN] A radio wave reflected by the lower atmosphere which produces an interference pattern when combined with the direct wave. { ,in·ter'fir·əns ,wāv }

Interferometer systems [ELECTR] Method of determining the position of a target in azimuth by using an interferometer to compare the phases of signals at the output terminals of a pair of antennas receiving a common signal from a distant source. { ,in·tə·fə'räm·əd·ər ,sis·təmz }

Interfix [COMPUT SCI] A technique for describing relationships of key words in an item or document in a way which prevents crosstalk from causing false retrievals when very specific entries are made. { 'in·tər,fiks }

Interior distribution [ELEC] Distribution of electric power within a building or plant. { in'tir·ē·ər ,di·strə'byü·shən }

Interior label [COMPUT SCI] A label attached to the data that it identifies. { in'tir·ē·ər 'lā·bəl }

Interlace [COMPUT SCI] To assign successive memory location numbers to physically separated locations on a storage tape or magnetic drum of a computer, usually to reduce access time. { ¦in·tər¦lās }

Interlaced scanning [ELECTR] A scanning process in which the distance from center to center of successively scanned lines is two or more times the nominal line width, so that adjacent lines belong to different fields. Also known as line interlace. { ¦in·tər¦lāst 'skan·iŋ }

Interlace operation [COMPUT SCI] System of computer operation where data can be read out or copied into memory without interfering with the other activities of the computer. { ¦in·tər¦lās ,äp·ə'rā·shən }

Interleave [COMPUT SCI] **1.** To alternate parts of one sequence with parts of one or more other sequences in a cyclic fashion such that each sequence retains its identity. **2.** To arrange the members of a sequence of memory addresses in different memory modules of a computer system, in order to reduce the time taken to access the sequence. { ,in·tər'lēv }

Interleaved windings [ELEC] An arrangement of winding coils around a transformer core in which the coils are wound in the form of a disk, with a group of disks for the low-voltage windings

stacked alternately with a group of disks for the high-voltage windings. { 'in·tər,lēvd 'wīn·diŋz }

interlock [COMPUT SCI] **1.** A mechanism, implemented in hardware or software, to coordinate the activity of two or more processes within a computing system, and to ensure that one process has reached a suitable state such that the other may proceed. **2.** *See* deadlock. { 'in·tər ,läk }

interlock relay [ELEC] A relay composed of two or more coils, each with its own armature and associated contacts, so arranged that movement of one armature or the energizing of its coil is dependent on the position of the other armature. { 'in·tər,läk ,rē,lā }

interlock switch [ELEC] A switch designed for mounting on a door, drawer, or cover so that it opens automatically when the door or other part is opened. { 'in·tər,läk ,swich }

interlude [COMPUT SCI] A small routine or program which is designed to carry out minor preliminary calculations or housekeeping operations before the main routine begins to operate, and which can usually be overwritten after it has performed its function. { 'in·tər,lüd }

intermediate control data [COMPUT SCI] Control data at a level which is neither the most nor the least significant, or which is used to sort records into groups that are neither the largest nor the smallest used; for example, if control data are used to specify state, town, and street, then the data specifying town would be intermediate control data. { ,in·tər'mēd·ē·ət kən'trōl ,dad·ə }

intermediate distributing frame [ELEC] Frame in a local telephone central office, the primary purpose of which is to cross-connect the subscriber line multiple to the subscriber line circuit; in a private exchange, the intermediate distributing frame is for similar purposes. { ,in·tər'mēd·ē·ət di'strib·yəd·iŋ ,frām }

intermediate frequency [ELECTR] In radio or radar heterodyne receivers, that frequency produced by mixing the received signal, presumably at the intended carrier frequency, with a local-oscillator signal offset from the carrier frequency, the intermediate frequency being the difference of the two. Abbreviated IF. { ,in·tər'mēd·ē·ət 'frē·kwən·sē }

intermediate-frequency amplifier [ELECTR] The section of a superheterodyne receiver that amplifies signals after they have been converted to the fixed intermediate-frequency value by the frequency converter. Abbreviated i-f amplifier. { ,in·tər'mēd·ē·ət |frē·kwən·sē 'am·plə,fī·ər }

intermediate-frequency jamming [ELECTR] Form of continuous wave jamming that is accomplished by transmitting two continuous wave signals separated by a frequency equal to the center frequency of the radar receiver intermediate-frequency amplifier, expecting the radar's own mixer to produce the obscuring intermediate-frequency signal. { ,in·tər'mēd·ē·ət |frē·kwən·sē 'jam·iŋ }

intermediate-frequency response ratio [ELECTR] In a superheterodyne receiver, the ratio of the intermediate-frequency signal input at the antenna to the desired signal input for identical outputs. Also known as intermediate-interference ratio. { ,in·tər'mēd·ē·ət |frē·kwən·sē ri'spāns ,rā·shō }

intermediate-frequency signal [ELECTR] A modulated or continuous-wave signal whose frequency is the intermediate-frequency value of a superheterodyne receiver and is produced by frequency conversion before demodulation. { ,in·tər'mēd·ē·ət |frē·kwən·sē ,sig·nəl }

intermediate-frequency stage [ELECTR] One of the stages in the intermediate-frequency amplifier of a superheterodyne receiver. { ,in·tər'mēd·ē·ət |frē·kwən·sē ,stāj }

intermediate-frequency strip [ELECTR] A receiver subassembly consisting of the intermediate-frequency amplifier stages, installed or replaced as a unit. { ,in·tər'mēd·ē·ət |frē·kwən·sē ,strip }

intermediate-frequency transformer [ELECTR] The transformer used at the input and output of each intermediate-frequency amplifier stage in a superheterodyne receiver for coupling purposes and to provide selectivity. Abbreviated i-f transformer. { ,in·tər'mēd·ē·ət |frē·kwən·sē tranz'fōr·mər }

intermediate-infrared radiation [ELECTROMAG] Infrared radiation having a wavelength between about 2.5 micrometers and about 50 micrometers; this range includes most molecular vibrations. Also known as mid-infrared radiation. { ,in·tər'mēd·ē·ət |in·frə|red ,rād·ē'ā·shən }

intermediate-interference ratio *See* intermediate-frequency response ratio. { ,in·tər 'mēd·ē·ət ,in·tər'fir·əns ,rā·shō }

intermediate language level [COMPUT SCI] A computer program that has been converted by a compiler into a form that does not resemble the original program but that still requires further processing by an interpreter at run time before it can be executed. { ,in·tər'mēd·ē·ət 'laŋ·gwij ,lev·əl }

intermediate memory storage [COMPUT SCI] An electronic device for holding working figures temporarily until needed and for releasing final figures to the output. { ,in·tər'mēd·ē·ət 'mem·rē ,stór·ij }

intermediate repeater [ELECTR] Repeater for use in a trunk or line at a point other than an end. { ,in·tər'mēd·ē·ət ri'pēd·ər }

intermediate result [COMPUT SCI] A quantity or value derived from an operation performed in the course of a program or subroutine which is itself used as an operand in further operations. { ,in·tər'mēd·ē·ət ri'zəlt }

intermediate storage [COMPUT SCI] The portion of the computer storage facilities that usually

stores information in the processing stage. [ˌin·tərˈmēd·ē·ət ˈstȯr·ij]

intermediate total [COMPUT SCI] A sum that is produced when there is a change in the value of control data at a level that is neither the most nor the least significant. [ˌin·tərˈmēd·ē·ət ˈtōd·əl]

intermediate trunk distributing frame [ELEC] A frame which mounts terminal blocks for connecting linefinders and first selectors. [ˌin·tərˈmēd·ē·ət ˈtrəŋk diˈstrib·yəd·iŋ ˌfrām]

intermittent current [ELEC] A unidirectional current that flows and ceases to flow at irregular or regular intervals. [ˌin·tərˈmit·ənt ˈkə·rənt]

intermittent scanning [ELECTR] Scans of an antenna beam at irregular intervals to increase difficulty of detection by intercept receivers. [ˌin·tərˈmit·ənt ˈskan·iŋ]

intermodulation [ELECTR] Modulation of the components of a complex wave by each other, producing new waves whose frequencies are equal to the sums and differences of integral multiples of the component frequencies of the original complex wave. [ˌin·tərˌmäj·əˈlā·shən]

intermodulation distortion [ELECTR] Nonlinear distortion characterized by the appearance of output frequencies equal to the sums and differences of integral multiples of the input frequency components; harmonic components also present in the output are usually not included as part of the intermodulation distortion. [ˌin·tərˌmäj·əˈlā·shən diˌstȯr·shən]

intermodulation interference [ELECTR] Interference that occurs when the signals from two undesired stations differ by exactly the intermediate-frequency value of a superheterodyne receiver, and both signals are able to pass through the preselector due to poor selectivity. [ˌin·tərˌmäj·əˈlā·shən ˌin·tərˈfir·əns]

internal arithmetic [COMPUT SCI] Arithmetic operations carried out in a computer's arithmetic unit within the central processing unit. [inˈtərn·əl əˈrith·məˌtik]

internal buffer [COMPUT SCI] A portion of a computer's main storage used to temporarily hold data that is being transferred into and out of main storage. [inˈtərn·əl ˈbəf·ər]

internal cache *See* primary cache. [inˌtərn·əl ˈkash]

internal clocking [COMPUT SCI] Synchronization of the electronic circuitry of a device by a timing clock within the device itself. [inˈtərn·əl ˈkläk·iŋ]

internal cycle time [COMPUT SCI] The time required to change the information in a single register of a computer, usually a fraction of the cycle time of the main memory. Also known as clock time. [inˈtərn·əl ˈsī·kəl ˌtīm]

internal data transfer [COMPUT SCI] The movement of data between registers in a computer's central processing unit or between a register and main storage. [inˈtərn·əl ˈdad·ə ˌtranz·fər]

internal dielectric field *See* dielectric field. [inˈtərn·əl ˌdī·əˈlek·trik ˈfēld]

internal hemorrhage [COMPUT SCI] A condition in which a computer program continues to run following an error but produces dubious results and may adversely affect other programs or the performance of the entire system. [inˈtərn·əl ˈhem·rij]

internal interrupt [COMPUT SCI] A signal for attention sent to a computer's central processing unit by another component of the computer. [inˈtərn·əl ˈint·əˌrəpt]

internal label [COMPUT SCI] An identifier providing a name for data that is recorded with the data in a storage medium. [inˈtərn·əl ˈlā·bəl]

internal loss *See* loss. [inˈtərn·əl ˈlȯs]

internally stored program [COMPUT SCI] A sequence of instructions stored inside the computer in the same storage facilities as the computer data, as opposed to external storage on tape, disk, or drum. [inˈtərn·əl·ē ˌstȯrd ˈprō·grəm]

internal memory *See* internal storage. [inˈtərn·əl ˈmem·rē]

internal modem *See* integral modem. [inˈtərn·əl ˈmōˌdem]

internal resistance [ELEC] The resistance within a voltage source, such as an electric cell or generator. [inˈtərn·əl riˈzis·təns]

internal schema [COMPUT SCI] The physical configuration of data in a data base. [inˈtərn·əl ˈskē·mə]

internal sorting [COMPUT SCI] The sorting of a list of items by a computer in which the entire list can be brought into the main computer memory and sorted in memory. [inˈtərn·əl ˈsȯrd·iŋ]

internal storage [COMPUT SCI] The total memory or storage that is accessible automatically to a computer without human intervention. Also known as internal memory. [inˈtərn·əl ˈstȯr·ij]

internal storage capacity [COMPUT SCI] The quantity of data that can be retained simultaneously in internal storage. [inˈtərn·əl ˈstȯr·ij kə ˌpas·əd·ē]

internal table [COMPUT SCI] A table or array that is coded directly into a computer program and is compiled along with the rest of the program. [inˈtərn·əl ˈtā·bəl]

international ampere [ELEC] The current that, when flowing through a solution of silver nitrate in water, deposits silver at a rate of 0.001118 gram per second; it has been superseded by the ampere as a unit of current, and is equal to approximately 0.999850 ampere. [ˌin·tərˈnash·ən·əl ˈam,pir]

international broadcasting [COMMUN] Radio broadcasting for public entertainment between different countries, on frequency bands between 5950 and 21,750 kilohertz, assigned by international agreement. [ˌin·tərˈnash·ən·əl ˈbrȯd,kast·iŋ]

international cable code *See* Morse cable code. [ˌin·tərˈnash·ən·əl ˈkā·bəl ˌkōd]

international call sign [COMMUN] Call sign assigned according to the provisions of the International Telecommunication Union to identify a radio station, the nationality of the radio station is identified by the first or the first two characters. [ˌin·tərˈnash·ən·əl ˈkȯl ˌsīn]

international code signal [COMMUN] Code adopted by many nations for international communications; it uses combinations of letters in lieu of words, phrases, and sentences; the letters are transmitted by the hoisting of international alphabet flags or by transmitting their dot and dash equivalents in the international Morse code. Also known as international signal code. { |in·tər|nash·ən·əl 'kōd ,sig·nəl }

international control frequency bands [COMMUN] Radio-frequency bands assigned in the United States to links between stations used for international communication and their associated control centers. { |in·tər|nash·ən·əl kən|trōl 'frē·kwən·sē ,banz }

international control station [COMMUN] Fixed station in the fixed public control service associated directly with the international fixed public radio communications service. { |in·tər|nash·ən·əl kən'trōl ,stā·shən }

international fixed public radio communications service [COMMUN] Fixed service, the stations of which are open to public correspondence; this service is intended to provide radio communications between the United States and its territories and foreign or overseas points. { |in·tər|nash·ən·əl |fikst |pəb·lik |rād·ē·ō kə ,myü·nə'kā·shən ,sər·vəs }

international Morse code *See* continental code. { |in·tər|nash·ən·əl |mors 'kōd }

international ohm [ELEC] A unit of resistance, equal to that of a column of mercury of uniform cross section that has a length of 160.3 centimeters and a mass of 14.4521 grams at the temperature of melting ice; it has been superseded by the ohm, and is equal to 1.00049 ohms. { |in·tər|nash·ən·əl 'ōm }

international radio silence [COMMUN] Three-minute periods of radio silence, on the frequency of 500 kilohertz only, commencing 15 and 45 minutes after each hour, during which all marine radio stations must listen on that frequency for distress signals of ships and aircraft. { |in·tər|nash·ən·əl |rād·ē·ō |sī·ləns }

international signal code *See* international code signal. { |in·tər|nash·ən·əl 'sig·nəl ,kōd }

international system of electrical units [ELEC] System of electrical units based on agreed fundamental units for the ohm, ampere, centimeter, and second, in use between 1893 and 1947, inclusive; in 1948, the Giorgi, or meter-kilogram-second-absolute system, was adopted for international use. { |in·tər|nash·ən·əl |sistəm əv i |lek·trə·kəl 'yü·nəts }

International telegraph alphabet *See* CCIT 2 code. { |in·tər|nash·ən·əl 'tel·ə,graf ,al·fə,bet }

International Telegraphic Consultative Committee code 2 *See* CCIT 2 code. { |in·tər|nash·ən·əl |tel·ə|graf·ik kən|səl·tə·div kə|mid·ē |kōd 'tü }

international volt [ELEC] A unit of potential difference or electromotive force, equal to 1/1.01858 of the electromotive force of a Weston cell at 20°C; it has been superseded by the volt, and is equal to 1.00034 volts. { |in·tər|nash·ən·əl 'vōlt }

Internet [COMMUN] A system of local area networks that are joined together by a common communications protocol. { 'in·tər,net }

Internet [COMPUT SCI] A worldwide system of interconnected computer networks, communicating by means of TCP/IP and associated protocols. { 'in·tər,net }

Internet Mail Access Protocol [COMPUT SCI] An Internet standard for directly reading and manipulating e-mail messages stored on remote servers. { |in·tər,net ,māl 'ak,ses ,prōd·ə,kól }

Internet protocol [COMMUN] The set of standards responsible for ensuring that data packets transmitted over the Internet are routed to their intended destinations. Abbreviated IP. { |in·tər ,net 'prōd·ə,kól }

Internet telephony [COMMUN] Phone calls routed over the Internet by analog-to-digital conversion of speech signals. { ,in·tər,net tə'lef·ə·nē }

Internetting [COMPUT SCI] Connections and communications paths between separate data communications networks that allow transfer of messages. { |in·tər|ned·iŋ }

Interoffice trunk [COMMUN] A direct trunk between local central offices in the same exchange. { |in·tər'óf·əs 'trəŋk }

Interphase reactor [ELEC] A type of current-equalizing reactor that is connected between two parallel silicon controlled rectifier converters and provides balanced system operation when both converters are conducting by acting as an inductive voltage divider. { 'in·tər,fāz rē,ak·tər }

Interphase transformer [ELECTR] Autotransformer or a set of mutually coupled reactors used in conjunction with three-phase rectifier transformers to modify current relations in the rectifier system to increase the number of anodes of different phase relations which carry current at any instant. { 'in·tər,fāz tranz,fór·mər }

Interphone [COMMUN] An intercommunication system using headphones and microphones for communication between adjoining or nearby studios or offices, or between crew locations on an aircraft, vessel, or tank or other vehicle. Also known as talk-back circuit. { 'in·tər,fōn }

Interpolation [MATH] A process used to estimate an intermediate value of one (dependent) variable which is a function of a second (independent) variable when values of the dependent variable corresponding to several discrete values of the independent variable are known. { in ,tər·pə'lā·shən }

interposition trunk [COMMUN] Trunk which connects two positions of a large switchboard so that a line on one position can be connected to a line on another position. { ,in·tər·pə'zish·ən ,trəŋk }

Interpreter [COMPUT SCI] **1.** A program that translates and executes each source program statement before proceeding to the next one. Also known as interpretive routine. **2.** *See* conversational compiler. { in'tər·prəd·ər }

Interpretive code *See* interpretive language. { in'tər·prəd·iv ,kōd }

interpretive language [COMPUT SCI] A computer programming language in which each instruction is immediately translated and acted upon by the computer, as opposed to a compiler which decodes a whole program before a single instruction can be executed. Also known as interpretive code. { in'tər·prəd·iv 'laŋ·gwij }

interpretive programming [COMPUT SCI] The writing of computer programs in an interpretive language, which generally uses mnemonic symbols to represent operations and operands and must be translated into machine language by the computer at the time the instructions are to be executed. { in'tər·prəd·iv 'prō,gram·iŋ }

interpretive trace program [COMPUT SCI] An interpretive routine that provides a record of the machine code into which the source program is translated and of the result of each step, or of selected steps, of the program. { in'tər·prəd·iv 'trās ,prō·gram }

interprocedure metric [COMPUT SCI] A software metric that estimates the complexity of a module or computer program based on the way that the data are used, organized, and allocated in relationship with some other modules. { ,in·tər·prə 'sē·jər 'me·trik }

interprocess communication [COMPUT SCI] The communication between computer programs running concurrently under the control of the same operating system. { ¦in·tər,prä·səs kə ,myü·ə'kā·shən }

interrecord gap *See* record gap. { ¦in·tər'rek·ərd ,gap }

interrogation [COMMUN] The transmission of a radio-frequency pulse, or combination of pulses, intended to trigger a transponder or group of transponders, a racon system, or an IFF system, in order to elicit an electromagnetic reply. Also known as challenging signal. { in,ter·ə'gā·shən }

interrogation suppressed time delay [COMMUN] Overall fixed time delay between transmission of an interrogation and reception of the reply to this interrogation at zero distance. { in,ter·ə'gā·shən sə¦prest 'tīm di,lā }

interrogator [ELECTR] **1.** A radar transmitter which sends out a pulse that triggers a transponder, usually combined in a single unit with a responsor, which receives the reply from a transponder and produces an output suitable for actuating a display of some navigational parameter. Also known as challenger; interrogator-transmitter. **2.** *See* interrogator-responsor. { in'ter·ə,gād·ər }

interrogator-responsor [ELECTR] A transmitter and receiver combined, used for sending out pulses to interrogate a radar beacon and for receiving and displaying the resulting replies. Also known as interrogator. { in'ter·ə,gād·ər ri'spän·sər }

interrogator-transmitter *See* interrogator. { in 'ter·ə,gād·ər tranz'mid·ər }

interrupt [COMPUT SCI] **1.** To stop a running program in such a way that it can be resumed at a later time, and in the meanwhile permit some other action to be performed. **2.** The action of such a stoppage. { 'int·ə,rəpt }

interrupt-driven system [COMPUT SCI] An operating system in which the interrupt system is the mechanism for reporting all changes in the states of hardware and software resources, and such changes are the events that induce new assignments of these resorces to meet work-load demands. { 'int·ə,rəpt ,driv·ən ,sis·təm }

interrupted continuous wave [COMMUN] A continuous wave that is interrupted at a constant audio-frequency rate high enough to give several interruptions for each keyed code dot. Abbreviated ICW. { 'int·ə,rəp·təd kən¦tin·yə·wəs 'wāv }

interrupted current [ELEC] A current produced by opening and closing at regular intervals a circuit that would otherwise carry a steady current or one that varied continuously with time. { 'int·ə ,rəp·təd 'kə·rənt }

interrupter [ELEC] An electric, electronic, or mechanical device that periodically interrupts the flow of a direct current so as to produce pulses. { 'int·ə,rəp·tər }

interrupter vibrator [ELEC] A mechanical device used to change direct current to alternating current. { 'int·ə,rəp·tər 'vī,brād·ər }

interrupt handler [COMPUT SCI] A section of a computer program or of the operating system that takes control when an interrupt is received and performs the operations required to service the interrupt. { 'int·ə,rəpt ,hand·lər }

interrupting capacity [ELEC] Maximum power in the arc that a circuit breaker or fuse can successfully interrupt without restrike or violent failure; rated in volt-amperes for alternating-current circuits and watts for direct-current circuits. { ,int·ə'rəp·tiŋ kə,pas·əd·ē }

interrupt mask [COMPUT SCI] A technique of suppressing certain interrupts and allowing the control program to handle these masked interrupts at a later time. { 'int·ə,rəpt ,mask }

interrupt mode *See* hold mode. { 'int·ə,rəpt ,mōd }

interrupt priorities [COMPUT SCI] The sequence of importance assigned to attending to the various interrupts that can occur in a computer system. { 'in·tə,rəpt prī,är·ə·dēz }

interrupt routine [COMPUT SCI] A program that responds to an interrupt by carrying out prescribed actions. { 'int·ə,rəpt rü,tēn }

interrupt signal [COMPUT SCI] A control signal which requests the immediate attention of the central processing unit. { 'int·ə,rəpt ,sig·nəl }

interrupt system [COMPUT SCI] The means of interrupting a program and proceeding with it at a later time; this is accomplished by saving the contents of the program counter and other specific registers, storing them in reserved areas, starting the new instruction sequence, and upon completion, reloading the program counter and registers to return to the original program, and reenabling the interrupt. { 'int·ə,rəpt ,sis·təm }

interrupt trap [COMPUT SCI] A program-controlled technique which either recognizes or ignores

an interrupt, depending upon a switch setting. { 'int·ə,rəpt ,trap }

interrupt vector [COMPUT SCI] A list comprising the locations of various interrupt handlers. { 'int·ə,rəpt ,vek·tər }

intersection data [COMPUT SCI] Data which are meaningful only when associated with the concatenation of two segments. { ,in·tər'sek·shən ,dad·ə }

interstage transformer [ELECTR] A transformer used to provide coupling between two stages. { 'in·tər,stāj tranz,fôr·mər }

interstation noise suppression *See* intercarrier noise suppression. { ¦in·tər'stā·shən 'nȯiz sə ,presh·ən }

intersymbol interference [COMMUN] In a transmission system, extraneous energy from the signal in one or more keying intervals which tends to interfere with the reception of the signal in another keying interval, or the disturbance which results. { ¦in·tər'sim·bəl ,in·tər'fir·əns }

intersystem communications [COMPUT SCI] The ability of two or more computer systems to share input, output, and storage devices, and to send messages to each other by means of shared input and output channels or by channels that directly connect central processors. { ¦in·tər¦sis·təm kə ,myü·nə'kā·shənz }

intertoll trunk [COMMUN] A trunk between toll offices in different telephone exchanges. { 'in·tər ,tōl 'trəŋk }

interval arithmetic [COMPUT SCI] A method of numeric computation in which each variable is specified as lying within some closed interval, and each arithmetic operation computes an interval containing all values that can result from operating on any numbers selected from the intervals associated with the operands. Also known as range arithmetic. { 'in·tər·vəl ə'rith·mə·tik }

intra-coded picture [COMMUN] A MPEG-2 picture that is coded using information present only in the picture itself and not depending on information from other pictures; provides a mechanism for random access into the compressed video data; employs transform coding of the pel blocks and provides only moderate compression. Also known as I-frame; I-picture. { ¦in·trə 'kōd·əd 'pik·chər }

intranet [COMPUT SCI] A private network, based on Internet protocols, that is accessible only within an organization. Intranets are set up for many purposes, including e-mail, access to corporate databases and documents, and videoconferencing, as well as buying and selling goods and services. { 'in·trə,net }

intraprocedure metric [COMPUT SCI] A software metric that determines the complexity of a computer program as a function of the relationships of the different modules constituting the program, generally by constructing a flow graph and deriving the complexity from this graph. { ,in·trə·prə¦sē·jər 'me·trik }

intrinsic-barrier diode [ELECTR] A *pin* diode, in which a thin region of intrinsic material separates the *p*-type region and the *n*-type region. { in'trin·sik ¦bar·ē·ər 'dī,ōd }

intrinsic-barrier transistor [ELECTR] A *pnip* or *npin* transistor, in which a thin region of intrinsic material separates the base and collector. { in'trin·sik ¦bar·ē·ər tran'zis·tər }

intrinsic conductivity [SOLID STATE] The conductivity of a semiconductor or metal in which impurities and structural defects are absent or have a very low concentration. { in'trin·sik ,kän ,dək'tiv·əd·ē }

intrinsic contact potential difference [ELEC] True potential difference between two perfectly clean metals in contact. { in'trin·sik 'kän,takt pə¦ten·chəl 'dif·ərns }

intrinsic detector [ENG] A semiconductor detector of electromagnetic radiation that utilizes the generation of electron-hole pairs across the semiconductor band gap. { in'trin·sik di'tek·tər }

intrinsic electric strength [ELEC] The extremely high dielectric strength displayed by a substance at low temperatures. { in¦trin·sik i¦lek·trik ,streŋkth }

intrinsic layer [ELECTR] A layer of semiconductor material whose properties are essentially those of the pure undoped material. { in'trin·sik 'lā·ər }

intrinsic procedure *See* built-in function. { in 'trin·sik prə'sē·jər }

inverse current [ELECTR] The current resulting from an inverse voltage in a contact rectifier. { 'in,vərs 'kə·rənt }

inverse direction [ELECTR] The direction in which the electron flow encounters greater resistance in a rectifier, going from the positive to the negative electrode; the opposite of the conducting direction. Also known as reverse direction. { 'in,vərs də'rek·shən }

inverse electrode current [ELECTR] Current flowing through an electrode in the direction opposite to that for which the tube is designed. { 'in ,vərs i'lek,trōd ,kə·rənt }

inverse feedback *See* negative feedback. { 'in ,vərs 'fēd,bak }

inverse limiter [ELECTR] A transducer, the output of which is constant for input of instantaneous values within a specified range and a linear or other prescribed function of the input for inputs above and below that range. { 'in,vərs 'lim·əd·ər }

inverse network [ELEC] Two two-terminal networks are said to be inverse when the product of their impedances is independent of frequency within the range of interest. { 'in,vərs 'net ,wərk }

inverse neutral telegraph transmission [COMMUN] Form of transmission in which marking signals are zero current intervals and spacing signals are current pulses of either polarity. { 'in ,vərs ,nü·trəl 'tel·ə,graf tranz,mish·ən }

inverse peak voltage [ELECTR] **1.** The peak value of the voltage that exists across a rectifier tube or x-ray tube during the half cycle in which current does not flow. **2.** The maximum instantaneous

voltage value that a rectifier tube or x-ray tube can withstand in the inverse direction (with anode negative) without breaking down and becoming conductive. { 'in,vərs ¦pēk 'vōl·tij }

inverse problem [CONT SYS] The problem of determining, for a given feedback control law, the performance criteria for which it is optimal. { 'in ,vərs 'präb·ləm }

inverse video *See* reverse video. { 'in,vərs ¦vid·ē·ō }

inverse voltage [ELECTR] The voltage that exists across a rectifier tube or x-ray tube during the half cycle in which the anode is negative and current does not normally flow. { 'in,vərs 'vōl·tij }

inversion [COMMUN] The process of scrambling speech for secrecy by beating the voice signal with a fixed, higher audio frequency and using only the difference frequencies. [ELEC] The solution of certain problems in electrostatics through the use of the transformation in Kelvin's inversion theorem. [OPTICS] The formation of an inverted image by an optical system. { in'vər·zhən }

inversion temperature [ENG] The temperature to which one junction of a thermocouple must be raised in order to make the thermoelectric electromotive force in the circuit equal to zero, when the other junction of the thermocouple is held at a constant low temperature. { in'vər·zhən ,tem·prə·chər }

inverted amplifier [ELECTR] A two-tube amplifier in which the control grids are grounded and the input signal is applied between the cathodes; the grid then serves as a shield between the input and output circuits. { in'vərd·əd 'am·plə,fī·ər }

inverted file [COMPUT SCI] **1.** A file, or method of file organization, in which labels indicating the locations of all documents of a given type are placed in a single record. **2.** A file whose usual order has been inverted. { in'vərd·əd 'fīl }

inverted L antenna [ELECTROMAG] An antenna consisting of one or more horizontal wires to which a connection is made by means of a vertical wire at one end. { in'vərd·əd ¦el an,ten·ə }

inverted vee [ELECTROMAG] **1.** A directional antenna consisting of a conductor which has the form of an inverted V, and which is fed at one end and connected to ground through an appropriate termination at the other. **2.** A center-fed horizontal dipole antenna whose arms have ends bent downward 45°. { in'vərd·əd 'vē }

inverter [ELEC] A device for converting direct current into alternating current; it may be electromechanical, as in a vibrator or synchronous inverter, or electronic, as in a thyratron inverter circuit. Also known as dc-to-ac converter, dc-to-ac inverter. [ELECTR] *See* phase inverter. { in'vərd·ər }

inverter circuit *See* NOT circuit. { in'vərd·ər ,sər·kət }

inverting amplifier [ELECTR] Amplifier whose output polarity is reversed as compared to its input; such an amplifier obtains its negative feedback by a connection from output to input, and with high gain is widely used as an operational amplifier. { in'vərd·iŋ 'am·plə,fī·ər }

inverting function [ELECTR] A logic device that inverts the input signal, so that the output is out of phase with the input. { in'vərd·iŋ ,fəŋk·shən }

inverting parametric device [ELECTR] Parametric device whose operation depends essentially upon three frequencies, a harmonic of the pump frequency and two signal frequencies, of which the higher signal frequency is the difference between the pump harmonic and the lower signal frequency. { in'vərd·iŋ ¦par·ə|me·trik di'vīs }

inverting terminal [ELECTR] The negative input terminal of an operational amplifier; a positive-going voltage at the inverting terminal gives a negative-going output voltage. { in'vərd·iŋ 'tər·mən·əl }

inward-outward dialing system [COMMUN] Dialing system whereby calls within the local exchange area may be dialed directly to and from base private branch exchange telephone stations without the assistance of the base private branch exchange operator; CENTREX, a service offered by some telephone companies, is a form of inward-outward dialing. { ¦in·wərd ¦aůt,wərd 'dī·liŋ ,sis·təm }

I/O *See* input/output.

IOCS *See* input/output control system.

IOGEN *See* input/output generation. { 'ī|ō,¡en }

ion-beam scanning [ELECTR] The process of analyzing the mass spectrum of an ion beam in a mass spectrometer either by changing the electric or magnetic fields of the mass spectrometer or by moving a probe. { 'ī,än ,bēm ,skan·iŋ }

ion burn *See* ion spot. { 'ī,än ,bərn }

ion-exchange electrolyte cell [ELEC] Fuel cell which operates on hydrogen and oxygen in the air, similar to the standard hydrogen-oxygen fuel cell with the exception that the liquid electrolyte is replaced by an ion-exchange membrane; operation is at atmospheric pressure and room temperature. { 'ī,än iks,chānj i'lek·trə,līt ,sel }

ion gage *See* ionization gage. { 'ī,än ,gāj }

ion gun *See* ion source. { 'ī,än ,gən }

ionic focusing *See* gas focusing. { ī'än·ik 'fō·kəs·iŋ }

ionic heated cathode [ELECTR] Hot cathode heated primarily by ionic bombardment of the emitting surface. { ī'än·ik ,hēd·əd 'kath,ōd }

ionization arc-over [ELEC] **1.** Arcing across terminals or contacts due to ionization of the adjacent air or gas. **2.** Arcing across satellite antenna terminals as the satellite passes through the ionized regions of the ionosphere. { ,ī·ə·nə'zā·shən 'ər ,kō·vər }

ionization current *See* gas current. { ,ī·ə·nə'zā·shən ¦kə·rənt }

ionization density [ELECTR] The density of ions in a gas. { ˌī·ə·nə'zā·shən ˈden·səd·ē }

ionization gage [ELECTR] An instrument for measuring low gas densities by ionizing the gas and measuring the ion current. Also known as ion gage; ionization vacuum gage. { ˌī·ə·nə'zā·shən ˌgāj }

ionization source *See* ion source. { ˌī·ə·nə'zā·shən ˌsȯrs }

ionization time [ELECTR] Of a gas tube, the time interval between the initiation of conditions for and the establishment of conduction at some stated value of tube voltage drop. { ˌī·ə·nə'zā·shən ˌtīm }

ionization vacuum gage *See* ionization gage. { ˌī·ə·nə'zā·shən 'vak·yəm ˌgāj }

ion microscope *See* field-ion microscope. { 'ī,än 'mī·krəˌskōp }

ion migration [ELEC] Movement of ions produced in an electrolyte, semiconductor, and so on, by the application of an electric potential between electrodes. { 'ī,än mī'grā·shən }

ionophone [ENG ACOUS] A high-frequency loudspeaker in which the audio-frequency signal modulates the radio-frequency supply to an arc maintained in a quartz tube, and the resulting modulated wave acts directly on ionized air to create sound waves. { ī'än·əˌfōn }

ionosphere [GEOPHYS] That part of the earth's upper atmosphere which is sufficiently ionized by solar ultraviolet radiation so that the concentration of free electrons affects the propagation of radio waves; its base is at about 40 or 50 miles (70 or 80 kilometers) and it extends to an indefinite height. { ī'an·əˌsfir }

ionospheric error [COMMUN] Variation in the character of the ionospheric transmission path or paths used by the radio waves of electronic navigation systems which, if not compensated, will produce an error in the information generated by the system. { ˌī,än·ə'sfir·ik 'er·ər }

ionospheric propagation [COMMUN] Propagation of radio waves over long distances by reflection from the ionosphere, useful at frequencies up to about 25 megahertz. { ˌī,än·ə'sfir·ik ˌpräp·ə'gā·shən }

ionospheric recorder [ELECTR] A radio device for determining the distribution of virtual height with frequency, and the critical frequencies of the various layers of the ionosphere. { ˌī,än·ə'sfir·ik ri'kȯrd·ər }

ionospheric scatter [COMMUN] A form of scatter propagation in which radio waves are scattered by the lower E layer of the ionosphere to permit communication over distances from 600 to 1400 miles (1000 to 2250 kilometers) when using the frequency range of about 25 to 100 megahertz. { ˌī,än·ə'sfir·ik 'skad·ər }

ionospheric wave *See* sky wave. { ˌī,än·ə'sfir·ik 'wāv }

ion pump [ELECTR] A vacuum pump in which gas molecules are first ionized by electrons that have been generated by a high voltage and are spiraling in a high-intensity magnetic field, and the molecules are then attracted to a cathode, or propelled by electrodes into an auxiliary pump or an ion trap. { 'ī,än ˌpəmp }

ion-selective field-effect transistor [ELECTR] A field-effect transistor whose gate electrode is sensitive to certain ions in an electrolyte, so that the gain of the transistor depends on the concentration of these ions. Abbreviated ISFET. { 'ī,än sə|lek·tiv 'fēld i,fekt tran'zis·tər }

ion source [ELECTR] A device in which gas ions are produced, focused, accelerated, and emitted as a narrow beam. Also known as ion gun; ionization source. { 'ī,än ˌsȯrs }

ion spot [ELECTR] Of a cathode-ray tube screen, an area of localized deterioration of luminescence caused by bombardment with negative ions. Also known as ion burn. { 'ī,än ˌspät }

ion trap [ELECTR] **1.** An arrangement whereby ions in the electron beam of a cathode-ray tube are prevented from bombarding the screen and producing an ion spot, usually employing a magnet to bend the electron beam so that it passes through the tiny aperture of the electron gun, while the heavier ions are less affected by the magnetic field and are trapped inside the gun. **2.** A metal electrode, usually of titanium, into which ions in an ion pump are absorbed. { 'ī,än ˌtrap }

IP address [COMPUT SCI] A computer's numeric address, such as 128.201.86.290, by which it can be located within a network. { ˌī'pē əˌdres }

I-picture *See* intra-coded picture. { 'ī ˌpik·chər }

IPL [COMPUT SCI] **1.** Collective term for a series of list-processing languages developed principally by A. Newell, H. A. Simon, and J. C. Shaw. Derived from Information Processing Language. **2.** *See* initial program load.

IPL button *See* bootstrap button. { ˌī|pē'el 'bət·ən }

IR drop *See* resistance drop. { ˌī|är 'dräp }

IRG *See* record gap.

iris [ELECTROMAG] A conducting plate mounted across a waveguide to introduce impedance; when only a single mode can be supported, an iris acts substantially as a shunt admittance and may be used for matching the waveguide impedance to that of a load. Also known as diaphragm; waveguide window. { 'ī·rəs }

I^2R loss *See* copper loss. { 'ī,skwerd'är ˌlȯs }

ISB modulation *See* independent-sideband modulation. { ˌī|es|bē ˌmäj·ə'lā·shən }

I-scan *See* I-display. { 'ī ˌskan }

I-scope *See* I-display. { 'ī ˌskōp }

ISDN *See* integrated services digital network.

ISDN modem [ELECTR] A device that converts signals used in a computer to signals that can be transmitted over the integrated services digital network, and vice versa. { ˌī,es,dē,en 'mōˌdem }

ISFET *See* ion-selective field-effect transistor. { 'isˌfet }

I signal [ELECTR] The in-phase component of the chrominance signal in color television, having a bandwidth of 0 to 1.5 megahertz, and consisting of $+0.74(R - Y)$ and $-0.27(B - Y)$, where Y is the luminance signal, R is the red camera signal, and B is the blue camera signal. { 'īˌsig·nəl }

isobits [COMPUT SCI] Binary digits having the same value. { 'ī·səˌbits }

isochronous circuits [ELEC] Circuits having the same resonant frequency. { ī'sä·krə·nəs 'sər·kəts }

isochronous communications [COMMUN] Synchronization of a data communications network from timing signals provided by the network itself. { ī'sä·krə·nəs kəˌmyü·nə'kā·shənz }

isocirculator [ELECTROMAG] A circulator that has an absorber in one of its terminals and thereby acts as an isolator. { ˌī·sō'sər·kyəˌlād·ər }

isoelectric [ELEC] Pertaining to a constant electric potential. { ˌī·sō·i'lek·trik }

isograph [ELECTR] An electronic calculator that ascertains both real and imaginary roots for algebraic equations. { 'ī·səˌgraf }

isolate [ELEC] To disconnect a circuit or piece of equipment from an electric supply system. { 'ī·səˌlāt }

isolated camera [ELECTR] **1.** A television camera that views a particular portion of a scene of action and produces a tape which can then be used either immediately for instant replay or for video replay at a later time. **2.** The technique of video replay involving such a camera. { 'ī·səˌlād·əd 'kam·rə }

isolated location [COMPUT SCI] A location in a computer memory which is protected by some hardware device so that it cannot be addressed by a computer program and its contents cannot be accidentally altered. { 'ī·səˌlād·əd lō'kā·shən }

isolating switch [ELEC] A switch intended for isolating an electric circuit from the source of power; it has no interrupting rating and is intended to be operated only after the circuit has been opened by some other means. { 'ī·səˌlād·iŋ ˌswich }

isolation [COMPUT SCI] The ability of a logic circuit having more than one input to ensure that each input signal is not affected by any of the others. { ˌī·sə'lā·shən }

isolation amplifier [ELECTR] An amplifier used to minimize the effects of a following circuit on the preceding circuit. { ˌī·sə'lā·shən 'am·pləˌfī·ər }

isolation diode [ELECTR] A diode used in a circuit to allow signals to pass in only one direction. { ˌī·sə'lā·shən 'dīˌōd }

isolation network [ELEC] A network inserted in a circuit or transmission line to prevent interaction between circuits on each side of the insertion point. { ˌī·sə'lā·shən 'netˌwərk }

isolation transformer [ELEC] A transformer inserted in a system to separate one section of the system from undesired influences of other sections. { ˌī·sə'lā·shən tranz'fȯr·mər }

isolator [ELECTR] A passive attenuator in which the loss in one direction is much greater than that in the opposite direction; a ferrite isolator for waveguides is an example. { 'ī·səˌlād·ər }

isolith [ELECTR] Integrated circuit of components formed on a single silicon slice, but with the various components interconnected by beam leads and with circuit parts isolated by removal of the silicon between them. { 'ī·səˌlith }

isopulse system [COMMUN] In adaptive communications, a pulse coding system wherein the number of information pulses transmitted is indicated by special inserted pulses. { 'ī·səˌpəls ˌsis·təm }

isotope lamp [ELECTR] A discharge lamp containing gas of a single isotope and thus producing highly monochromatic light. { 'ī·səˌtōp ˌlamp }

isotropic antenna *See* unipole. { ˌī·sə¦trā·pik an'ten·ə }

isotropic dielectric [ELEC] A dielectric whose polarization always has a direction that is parallel to the applied electric field, and a magnitude which does not depend on the direction of the electric field. { ˌī·sə¦trā·pik ˌdī·ə'lek·trik }

isotropic gain of an antenna *See* absolute gain of an antenna. { ˌī·sə¦trā·pik 'gān əv ən an'ten·ə }

item [COMPUT SCI] A set of adjacent digits, bits, or characters which is treated as a unit and conveys a single unit of information. { 'īd·əm }

item advance [COMPUT SCI] A technique of efficiently grouping records to optimize the overlap of read, write, and compute times. { 'īd·əm əd ˌvans }

item design [COMPUT SCI] The specification of what fields make up an item, the order in which the fields are to be recorded, and the number of characters to be allocated to each field. { 'īd·əm diˌzīn }

item size [COMPUT SCI] The length of an item expressed in characters, words, or blocks. { 'īd·əm ˌsīz }

iteration process [COMPUT SCI] The process of repeating a sequence of instructions with minor modifications between successive repetitions. { ˌid·ə'rā·shən ˌprä·səs }

iterations per second [COMPUT SCI] In computers, the number of approximations per second in iterative division; the number of times an operational cycle can be repeated in 1 second. { ˌid·ə'rā·shənz pər 'sek·ənd }

iterative array [COMPUT SCI] In a computer, an array of a large number of interconnected identical processing modules, used with appropriate driver and control circuits to permit a large number of simultaneous parallel operations. { 'id·əˌrād·iv ə'rā }

iterative division [COMPUT SCI] In computers, a method of dividing by use of the operations of addition, subtraction, and multiplication; a

quotient of specified precision is obtained by a series of successively better approximations. { 'id·ə,rād·iv di'vizh·ən }

iterative filter [ELECTR] Four-terminal filter that provides iterative impedance. { 'id·ə,rād·iv 'filtər }

iterative impedance [ELECTR] Impedance that, when connected to one pair of terminals of a four-terminal transducer, will cause the same impedance to appear between the other two terminals. { 'id·ə,rād·iv im'pēd·əns }

iterative routine [COMPUT SCI] A computer program that obtains a result by carrying out a series of operations repetitiously until some specified condition is met. { 'id·ə,rād·iv rü'tēn }

ITV *See* industrial television.

J

Jablochkoff candle [ELECTR] An early type of arc lamp in which carbons were placed side by side and separated by plaster of paris. { yə'bläch,kóf ,kand·əl }

jack [ELEC] A connecting device into which a plug can be inserted to make circuit connections; may also have contacts that open or close to perform switching functions when the plug is inserted or removed. { jak }

jammer [ELECTR] One who, or equipment which, transmits electromagnetic signals to obscure or deceive radio or radar receivers, preventing them from receiving the intended signals clearly. { 'jam·ər }

jammer finder [ELECTR] Radar which attempts to obtain the range of the target by training a highly directional pencil beam on a jamming source. Also known as burnthrough. { 'jam·ər ,fīn·dər }

jamming [ELECTR] Radiation, reradiation, or reflection of electromagnetic waves so as to impair the usefulness of the radio spectrum for military purposes including communication and radar. Also known as active jamming; electronic jamming. { 'jam·iŋ }

J antenna [ELECTROMAG] Antenna having a configuration resembling a J, consisting of a half-wave antenna end-fed by a parallel-wire quarter-wave section. { 'jā ant,en·ə }

jar [ELEC] A unit of capacitance equal to 1000 statfarads, or approximately 1.11265×10^{-9} farad; it is approximately equal to the capacitance of a Leyden jar; this unit is now obsolete. { jär }

Java [COMPUT SCI] An object-oriented programming language based on C++ that was designed to run in a network such as the Internet; mostly used to write programs, called applets, that can be run on Web pages. { 'jäv·ə }

JavaScript [COMPUT SCI] A scripting language that is added to standard HTML to create interactive documents. { 'jäv·ə,skript }

Java virtual machine [COMPUT SCI] An interpreter that translates Java bytecode into actual machine instructions in real time. Abbreviated JVM. { ¦jäv·ə ,vər·chə·wəl mə'shēn }

J box See junction box. { 'jā ,bäks }

J-display [ELECTR] A radar display format in which range is presented as a reference circle with radial projections from it indicating echo strength; a circular A-display. Also known as J-indicator; J-scan; J-scope. { 'jā di,splā }

JFET See junction field-effect transistor. { 'jā ,fet }

J-indicator See J-display. { 'jā ,in·də,kād·ər }

jitter [COMMUN] In facsimile, distortion in the received copy caused by momentary errors in synchronism between the scanner and recorder mechanisms; does not include slow errors in synchronism due to instability of the frequency standards used in the facsimile transmitter and recorder. [ELECTR] Small, rapid variations in a waveform due to mechanical vibrations, fluctuations in supply voltages, control-system instability, and other causes. { 'jid·ər }

jittered pulse recurrence frequency [COMMUN] Random variation of the pulse repetition period; provides a discrimination capability against repeater-type jammers. { 'jid·ərd ¦pōls ri¦kə·rəns 'frē·kwən·sē }

J-K flip-flop [ELECTR] A storage stage consisting only of transistors and resistors connected as flip-flops between input and output gates, and working with charge-storage transistors; gives a definite output even when both inputs are 1. { ¦jā¦kā 'flip,fläp }

job [COMPUT SCI] A unit of work to be done by the computer; it is a single entity from the standpoint of computer installation management, but may consist of one or more job steps. { jäb }

job class [COMPUT SCI] The set of jobs on a computer system whose resource requirements (for the central processing unit, memory, and peripheral devices) fall within specified ranges. { 'jäb ,klas }

job control block [COMPUT SCI] A group of data containing the execution-control data and the job identification when the job is initiated as a unit of work to the operating system. { 'jäb kən ,trōl ,bläk }

job control language See command language. { 'jäb kən,trōl ,laŋ·gwij }

job control statement [COMPUT SCI] Any of the statements used to direct an operating system in its functioning, as contrasted to data, programs, or other information needed to process a job but

not intended directly for the operating system itself. Also known as control statement. { 'jäb kən,trōl ,stät·mənt }

job entry system [COMPUT SCI] A part of the operating system of a large computer system that accepts and schedules jobs for execution and controls the printing of output. { 'jäb ˌen·trē ˌsis·təm }

job family *See* job class. { 'jäb ˌfam·lē }

job flow control [COMPUT SCI] Control over the order in which jobs are handled by a computer in order to use the central processing units and the units under the computer's control as efficiently as possible. { 'jäb 'flō kənˌtrōl }

job grade *See* job class. { 'jäb ˌgrād }

job library [COMPUT SCI] A partitioned data set, or a concatenation of partitioned data sets, used as the primary source of object programs (load modules) for a particular job, and more generally, as a source of runnable programs from which all or most of the programs for a given job will be selected. { 'jäb ˌlīˌbrer·ē }

job management program [COMPUT SCI] A control program in a computer's operating system that initials and schedules jobs. { 'jäb ˌman·ij·mənt ˌprō·gram }

job mix [COMPUT SCI] The distribution of the jobs handled by a computer system among the various job classes. { 'jäb, miks }

job-oriented terminal [COMPUT SCI] A terminal, such as a point-of-sale terminal, at which data taken directly from a source can enter a communication network directly. { ˌjäb ˌȯr·ē,ent·əd 'tər·mən·əl }

job processing control [COMPUT SCI] The section of the control program responsible for initiating operations, assigning facilities, and proceeding from one job to the next. { 'jäb ˌprä·ses·iŋ kənˌtrōl }

job queue [COMPUT SCI] A set of computer programs that are ready to be executed in a prescribed order. { 'jäb ˌkyü }

job schedule [CONT SYS] A control program that selects from a job queue the next job to be processed. { 'jäb ˌsked·yül }

job stacking [COMPUT SCI] The presentation of jobs to a computer system, each job followed by another. { 'jäb ˌstak·iŋ }

job step [COMPUT SCI] A unit of work in a job stream. { 'jäb ˌstep }

job stream [CONT SYS] A collection of jobs in a job queue. { 'jäb ˌstrēm }

job swapping [COMPUT SCI] Temporary suspension of job processing by a computer so that higher-priority jobs can be handled. { 'jäb ˌswäp·iŋ }

jogging [ELEC] Quickly repeated opening and closing of a circuit to produce small movements of the driven machine. Also known as inching. { 'jäg·iŋ }

Johnson noise *See* thermal noise. { 'jän·sən ˌnȯiz }

join [COMPUT SCI] A portion of a robotic control program that directs an activity to resume after it has been interrupted. { jȯin }

joint [ELEC] A juncture of two wires or other conductive paths for current. [ENG] The surface at which two or more mechanical or structural components are united. { jȯint }

Joint Photographic Experts Group [COMPUT SCI] An international group that sets standards for continuous-tone image (still and video) coding. { jȯint ˌfōd·əˌgraf·iks 'ek,spərts ˌgrüp }

joint pole [ELEC] Pole used in common by two or more utility companies. { 'jȯint 'pōl }

joint space [CONT SYS] The space defined by a vector whose components are the translational and angular displacements of each joint of a robotic link. { 'jȯint ˌspās }

Joshi effect [ELECTR] The change in the current passing through a gas or vapor when the gas or vapor is irradiated with visible light. { 'jō·shē ˌfekt }

Joule heat [ELEC] The heat which is evolved when current flows through a medium having electrical resistance, as given by Joule's law. { 'jül ˌhēt }

Joule's law [ELEC] The law that when electricity flows through a substance, the rate of evolution of heat in watts equals the resistance of the substance in ohms times the square of the current in amperes. { 'jülz ˌlȯ }

journaling [COMPUT SCI] Recording processes or transactions for backup or accounting purposes. { 'jər·nəl·iŋ }

joystick [ENG] A two-axis displacement control operated by a lever or ball, for XY positioning of a device or an electron beam. { 'jȯiˌstik }

JPEG [ENG] Graphics file format for compressed still images, particularly photographic images found on the World Wide Web; developed by the Joint Photographic Experts Group. { 'jāˌpeg }

J-scan *See* J-display. { 'jāˌskan }

J-scope *See* J-display. { 'jāˌskōp }

jump [COMPUT SCI] A transfer of control which terminates one sequence of instructions and begins another sequence at a different location. Also known as branch; transfer. { jəmp }

jumper [ELEC] A short length of conductor used to close a circuit between two electircal terminals. { 'jəm·pər }

jumping trace routine [COMPUT SCI] A trace routine which is primarily concerned with providing a record of jump instructions in order to show the sequence of program steps that the computer followed. { 'jəm·piŋ ˌtrās rüˌtēn }

jump phenomenon [CONT SYS] A phenomenon occurring in a nonlinear system subjected to a sinusoidal input at constant frequency, in which the value of the amplitude of the forced oscillation can jump upward or downward as the input amplitude is varied through either of two fixed values, and the graph of the forced amplitude versus the input amplitude follows a hysteresis loop. { 'jəmp fə,näm·ə·nən }

jump resonance [CONT SYS] A jump discontinuity occurring in the frequency response of a nonlinear closed-loop control system with saturation in the loop. { 'jəmp ,rez·ən·əns }

jump vector [COMPUT SCI] A list of entry-point addresses for various sections of a computer program, used by the program to branch to a section that performs a desired function. Also known as vector; vector table. { 'jəmp ,vek·tər }

junction [ELEC] *See* major node. [ELECTR] A region of transition between two different semiconducting regions in a semiconductor device, such as a *pn* junction, or between a metal and a semiconductor. [ELECTROMAG] A fitting used to join a branch waveguide at an angle to a main waveguide, as in a tee junction. Also known as waveguide junction. { 'jəŋk·shən }

junction box [ENG] A protective enclosure into which wires or cables are led and connected to form joints. Also known as J box. { 'jəŋk·shən ,bäks }

junction capacitance *See* barrier capacitance. { 'jəŋk·shən kə'pas·əd·əns }

junction capacitor [ELECTR] An integrated-circuit capacitor that uses the capacitance of a reverse-biased *pn* junction. { 'jəŋk·shən kə¦pas·əd·ər }

junction diode [ELECTR] A semiconductor diode in which the rectifying characteristics occur at an alloy, diffused, electrochemical, or grown junction between *n*-type and *p*-type semiconductor materials. Also known as junction rectifier. { 'jəŋk·shən ¦dī,ōd }

junction field-effect transistor [ELECTR] A field-effect transistor in which there is normally a channel of relatively low-conductivity semiconductor joining the source and drain, and this channel is reduced and eventually cut off by junction depletion regions, reducing the conductivity, when a voltage is applied between the gate electrodes. Abbreviated JFET. { 'jəŋk·shən 'fēld i,fekt tran¦zis·tər }

junction filter [ELECTR] A combination of a high-pass and a low-pass filter that is used to separate frequency bands for transmission over separate paths. { 'jəŋk·shən ,fil·tər }

junction isolation [ELECTR] Electrical isolation of a component on an integrated circuit by surrounding it with a region of a conductivity type that forms a junction, and reverse-biasing the junction so it has extremely high resistance. { 'jəŋk·shən ,ī·sə'lā·shən }

junction loss [COMMUN] In telephone circuits, that part of the repetition equivalent assignable to interaction effects arising at trunk terminals. { 'jəŋk·shən ,lós }

junction phenomena [ELECTR] Phenomena which occur at the boundary between two semiconductor materials, or a semiconductor and a metal, such as the existence of an electrostatic potential in the absence of current flow, and large injection currents which may arise when external voltages are applied across the junction in one direction. { 'jəŋk·shən fə,näm·ə·nə }

junction point *See* branch point. { 'jəŋk·shən ,pòint }

junction pole [ELEC] Pole at the end of a transposition section of an open-wire line or the pole common to two adjacent transposition sections. { 'jəŋk·shən ,pōl }

junction rectifier *See* junction diode. { 'jəŋk·shən ¦rek·tə,fī·ər }

junction station [ELECTR] Microwave relay station that joins a microwave radio leg or legs to the main or through route. { 'jəŋk·shən ,stā·shən }

junction transistor [ELECTR] A transistor in which emitter and collector barriers are formed between semiconductor regions of opposite conductivity type. { 'jəŋk·shən tran¦zis·tər }

junction transposition [ELEC] Transposition located at the junction pole between two transposition sections of an open-wire line. { 'jəŋk·shən ,tranz·pə'zish·ən }

junctor [ELEC] In crossbar systems, a circuit extending between frames of a switching unit and terminating in a switching device on each frame. { 'jəŋk·tər }

justify [COMPUT SCI] To shift data so that they assume a particular position relative to one or more reference points, lines, or marks in a storage medium. { 'jəs·tə,fī }

JVM *See* Java virtual machine.

K

k *See* kilobit.

K *See* cathode; kilobyte.

kA *See* kiloampere.

Ka band [COMMUN] A band of frequencies extending from 33 to 36 gigahertz, corresponding to wavelengths of 9.09 to 8.34 millimeters. { kā'ā ,band }

Kalman filter [CONT SYS] A linear system in which the mean squared error between the desired output and the actual output is minimized when the input is a random signal generated by white noise. { 'kal·mən ,fil·tər }

Kanji [COMPUT SCI] A set of Chinese characters that are employed by users of the Chinese language to code information in computer programs and on visual displays. { 'kän·jē }

Karnaugh map [ELECTR] A truth table that has been rearranged to show a geometrical pattern of functional relationships for gating configurations; with this map, essential gating requirements can be recognized in their simplest form. { 'kär·nō ,map }

Karp circuit [ELECTR] A slow-wave circuit used at millimeter wavelengths for backward-wave oscillators. { 'kärp ,sər·kət }

K band [COMMUN] A band of radio frequencies extending from 10,900 to 36,000 megahertz, corresponding to wavelengths of 2.75 to 0.834 centimeters. { 'kā ,band }

K-band single-access service [COMMUN] A service provided by the Tracking and Data Relay Satellite System, with return-link data rates up to 300 and 800 megabits per second for the Ku and Ka bands, respectively, and forward-link data at 25 megabits per second in both bands. Abbreviated KSA. { |kā,band |siŋ·gəl 'ak ,ses ,sər·vəs }

kbit *See* kilobit. { 'kā,bit }

Kbit *See* kilobit. { 'kā,bit }

kbyte *See* kilobyte. { 'kā,bīt }

Kbyte *See* kilobyte. { 'kā,bīt }

KDD *See* knowledge discovery in databases.

K-display [ELECTR] A radar display format in which an echo signal appears on side-by-side A-displays, as from a two-beam tracking radar antenna, with equal amplitudes indicating no pointing error. Also known as K-indicator; K-scan; K-scope. { 'kā di,splā }

keep-alive circuit [ELECTR] A circuit used with a transmit-receive (TR) tube or anti-TR tube to produce residual ionization for the purpose of reducing the initiation time of the main discharge. { |kēp ə'līv ,sər·kət }

keep-alive electrode *See* ignitor. { |kēp ə'līv i'lek ,trōd }

kelvin [ELEC] A name formerly given to the kilowatt-hour. Also known as thermal volt. { 'kel·vən }

Kelvin bridge [ELEC] A specialized version of the Wheatstone bridge network designed to eliminate, or greatly reduce, the effect of lead and contact resistance, and thus permit accurate measurement of low resistance. Also known as double bridge; Kelvin network; Thomson bridge. { 'kel·vən ,brij }

Kelvin guard-ring capacitor [ELEC] A capacitor with parallel circular plates, one of which has a guard ring separated from the plate by a narrow gap; it is used as a standard, whose capacitance can be accurately calculated from its dimensions. { 'kel·vən 'gärd ,riŋ kə,pas·əd·ər }

Kelvin network *See* Kelvin bridge. { 'kel·vən ,net ,wərk }

Kelvin replenisher [ELEC] A simple electrostatic generator in which curved metal plates attached to an insulating arm rotate between larger curved plates, and the contacts of the smaller plates with wipers connecting them to the larger plates and to each other result in the accumulation of charge on the smaller plates, energy being supplied by the rotation of the arm. { |kel·vən ri'plen·əsh·ər }

Kelvin skin effect *See* skin effect. { 'kel·vən 'skin i,fekt }

Kendall effect [COMMUN] A spurious pattern or other distortion in a facsimile record caused by unwanted modulation products arising from the transmission of a carrier signal; occurs principally when the width of one side band is greater than

half the facsimile carrier frequency. { 'kend·əl i ,fekt }

kenotron [ELEC] A high-vacuum diode designed to serve as a rectifier in appliances requiring high voltage and low current. { 'ken·ə,trän }

kernel [COMPUT SCI] **1.** A computer program that must be modified before it can be used on a particular computer. **2.** The programs that form the most essential part of a computer's operating system. { 'kərn·əl }

Kerr cell [OPTICS] A glass cell containing a dielectric liquid that exhibits the Kerr effect, such as nitrobenzene, in which is inserted the two plates of a capacitor, used to observe the Kerr effect on light passing through the cell. { 'kər ,sel }

Kerr effect *See* electrooptical Kerr effect. { 'kər i,fekt }

key [COMMUN] A telephone term for an on-off switch in the subscriber loop, either at a manual switchboard or in the telephone set. [COMPUT SCI] A data item that serves to uniquely identify a data record. [ELEC] **1.** A hand-operated switch used for transmitting code signals. Also known as signaling key. **2.** A special lever-type switch used for opening or closing a circuit only as long as the handle is depressed. Also known as switching key. { kē }

key access [COMPUT SCI] Locating data in a file by using the value of a key. { 'kē ,ak,ses }

key auto-key cipher [COMMUN] A stream cipher in which the cryptographic bit stream generated at a given time is determined by the cryptographic bit stream generated at earlier times. { 'kē 'ód·ō ,kē ,sī·fər }

keyboard [ENG] A set of keys or control levers having a systematic arrangement and used to operate a machine or other piece of equipment such as a typewriter, typesetter, processing unit of a computer, or piano. { 'kē,bȯrd }

keyboard enhancer [COMPUT SCI] Software that expands the functions of a computer keyboard by allowing the user to implement functions or enter predefined segments of text with a single keystroke. Also known as keyboard processor. { 'kē,bȯrd in,han·sər }

keyboard entry [COMPUT SCI] A piece of information fed manually into a computing system by means of a set of keys, such as a typewriter. { 'kē ,bȯrd 'en·trē }

keyboard inquiry [COMPUT SCI] A question asked a computer concerning the status of a program being run, or concerning the value achieved by a specific variable, by means of a console typewriter. { 'kē,bȯrd ¦in·kwə·rē }

keyboard lockout [COMPUT SCI] An arrangement for preventing transmission from a particular keyboard while other transmissions are taking place on the same circuit. { 'kē,bȯrd 'läk,aůt }

keyboard lockup [COMPUT SCI] A condition in which entries typed on a keyboard are ignored by a terminal. { 'kē,bȯrd 'läk,əp }

keyboard mapping [COMPUT SCI] The process of assigning the meaning of keys on a computer keyboard. { 'kē,bȯrd ,map·iŋ }

keyboard printer [COMPUT SCI] A computer input device that includes a keyboard and a printer that prints the keyed-in data and often also prints computer output information. { 'kē,bȯrd 'print·ər }

keyboard processor [COMPUT SCI] **1.** The circuitry in a computer keyboard that converts keystrokes into the appropriate character codes. **2.** *See* keyboard enhancer. { 'kē,bȯrd ,prä,ses·ər }

keyboard send/receive [ELECTR] A manual teleprinter that can transmit or receive. Abbreviated KSR. Also known as keyboard teleprinter. { 'kē,bȯrd ¦send·ri'sēv }

keyboard teleprinter *See* keyboard send/receive. { 'kē,bȯrd 'tel·ə,print·ər }

keyboard template [COMPUT SCI] A card that is placed adjacent to the function keys of a computer keyboard and identifies their use for a particular software environment. { 'kē,bȯrd ,tem,plət }

key cabinet [ELECTR] A case, installed on a customer's premises, to permit different lines to the control office to be connected to various telephone stations; it has signals to indicate originating calls and busy lines. { 'kē ,kab·ə·nət }

key change [COMPUT SCI] The occurrence, in a file of records which have been sorted according to their keys and are being read into a computer, of a record whose key differs from that of its immediate predecessor. { 'kē ,chānj }

key compression [COMPUT SCI] A technique used to reduce the number of bits contained in a key. { 'kē kəm,presh·ən }

key-disk machine [COMPUT SCI] A keyboard machine used to record data directly on a magnetic disk. { 'kē ,disk mə,shēn }

keyed clamp [ELECTR] Clamping circuit in which the time of clamping is determined by a control signal. { 'kēd 'klamp }

keyed clamp circuit [ELECTR] A clamp circuit in which the time of clamping is controlled by separate voltage or current sources, rather than by the signal itself. Also known as synchronous clamp circuit. { 'kēd 'klamp ,sər·kət }

keyed sequential access method [COMPUT SCI] A method for locating data in a file either directly, by using the value of a key within a particular record, or sequentially, according to the values of the keys in all the records of the file. Abbreviated KSAM. { 'kēd si'kwen·chəl 'ak,ses ,meth·əd }

key entry [COMPUT SCI] The entering of data into a computer by means of a keyboard. { 'kē ,en·trē }

keyer [ELECTR] Device which changes the output of a transmitter from one condition to another according to the intelligence to be transmitted. { 'kē·ər }

keyer adapter [ELECTR] Device which detects a modulated signal and produces the modulating frequency as a direct-current signal of varying amplitude. { 'kē·ər ə,dap·tər }

key field [COMPUT SCI] A field in a segment or record that holds the value of a key to that record. { 'kē ,fēld }

keying [COMMUN] The forming of signals by modulating a direct current or other carrier between discrete values of some characteristic. { 'kē·iŋ }

keying error rate [COMMUN] The ratio of the number of characters incorrectly transmitted to the total number of characters in a message. { 'kē·iŋ 'er·ər ˌrāt }

keying frequency [COMMUN] In facsimile, the maximum number of times a second that a black-line signal occurs when scanning the subject copy. { 'kē·iŋ ˌfrē·kwən·sē }

keying interval [COMMUN] In a periodically keyed transmission system, one of the set of intervals starting from a change in state and equal in length to the shortest time between changes of state. { 'kē·iŋ ˌint·ər·vəl }

keying sequence [COMMUN] A sequence of letters or numbers that enciphers or deciphers a polyalphabetic substitution cipher character by character. { 'kē·iŋ ˌsē·kwəns }

keying wave *See* marking wave. { 'kē·iŋ ˌwāv }

keyless ringing [COMMUN] Form of machine ringing on a manual telephone switchboard which is started automatically by the insertion of the calling plug into the jack of the called line. { 'kē·ləs 'riŋ·iŋ }

keylock switch [ELEC] A switch that can be operated only by inserting and turning a key such as that used in ordinary locks. { 'kēˌläk ˌswich }

keypad [COMPUT SCI] A cluster of special-purpose keys to one side of the regular typing keys on a terminal keyboard. { 'kēˌpad }

key pulse [COMMUN] System of signaling where numbered keys are depressed instead of using a dial. { 'kē ˌpəls }

key punch [COMPUT SCI] A keyboard-actuated device that punches holes in a card; it may be a hand-feed punch or an automatic feed punch. { 'kē ˌpənch }

keystone distortion [COMMUN] Distortion produced by scanning in a rectilinear manner, with constant-amplitude sawtooth waves, a plane target area which is not normal to the average direction of the beam. { 'kēˌstōn di'stȯr·shən }

keystoning [ELECTR] Producing a keystone-shaped (wider at the top than at the bottom, or vice versa) scanning pattern resulting from an off-axis condition between an image-projection device and the display surface. { 'kēˌstōn·iŋ }

keyswitch [COMPUT SCI] A switch that is operated by depressing a key on the keyboard of a data entry terminal. { 'kēˌswich }

key telephone system [COMMUN] A telephone system consisting of phones with several keys, connecting cables, and relay switching apparatus, which does not need a special operator to handle incoming or outgoing calls and which generally permits users to select one of several possible lines and to hold calls. { 'kē 'tel·əˌfōn ˌsis·təm }

key telephone unit [COMMUN] A small mounting plate with relays which performs pickup and hold switching functions in a key telephone system. { 'kē 'tel·əˌfōn ˌyü·nət }

key-to-disk system [COMPUT SCI] A data-entry system in which information entered on several keyboards is collected on different sections of a magnetic disk, and the data are extracted from the disk when complete, and are copied onto a magnetic tape or another disk for further processing on the main computer. { 'kē tə 'disk ˌsis·təm }

key-to-tape system [COMPUT SCI] A data-entry system, predecessor to the modern key-to-disk system, consisting of several keyboards connected to a central controlling unit, typically a minicomputer, which collected information from each keyboard and then directed it to a magnetic tape. { 'kē tə 'tāp ˌsis·təm }

key transformation [COMPUT SCI] A function that assigns integer values to keys. { 'kē ˌtranz·fər'mā·shən }

key value [COMPUT SCI] The actual characters contained in a key. { 'kē 'val·yü }

keyword [COMPUT SCI] A group of letters and numbers in a specific order that has special significance in a computer system. { 'kēˌwərd }

keyword-in-context index [COMPUT SCI] A computer-generated listing of titles of documents, produced on a line printer, with the keywords lined up vertically in a fixed position within the title and arranged in alphabetical order. Abbreviated KWIC index. { 'kēˌwərd in 'kän ˌtekst ˌinˌdeks }

keyword-out-of-context index [COMPUT SCI] A computer-generated listing of document titles with their keywords listed separately, arranged in the alphabetical order of the keywords. Abbreviated KWOC index. { 'kēˌwərd aůt əv 'känˌtekst ˌinˌdeks }

keyword parameter [COMPUT SCI] A parameter whose significance is indicated by a keyword, usually with an equal sign linking the two. { 'kē ˌwərd pə'ram·əd·ər }

keyword search [COMPUT SCI] A method of filing and locating information through the use of keywords that describe the content of records. { 'kēˌwərd ˌsərch }

keyword spotting [ENG ACOUS] An approach to task-oriented speech understanding through detecting a limited number of keywords that would most likely express the intent of a speaker, rather than attempting to recognize every word in an utterance. { 'kēˌwərd ˌspät·iŋ }

KHN filter *See* state-variable filter. { ¦kā¦āch'en ˌfil·tər }

kidney joint [ELECTROMAG] Flexible joint, or air-gap coupling, used in the waveguide of certain radars and located near the transmitting-receiving position. { 'kid·nē ˌjȯint }

killer circuit [ELECTR] Vaccum tube or tubes and associated circuits in which are generated the blanking pulses used to temporarily disable a radar set. { 'kil·ər ˌsər·kət }

killer pulse [ELECTR] Blanking pulse generated by a killer circuit. { 'kil·ər ˌpəls }

killer stage *See* color killer circuit. { 'kil·ər ˌstāj }

kiloampere [ELEC] A metric unit of current flow equal to 1000 amperes. Abbreviated kA. { 'ki·lō'amˌpir }

kilobit [COMPUT SCI] A unit of information content equal to 1024 bits. Abbreviated kbit; Kbit. Symbolized k. { 'kil·ə,bit }

kilobyte [COMPUT SCI] A unit of information content equal to 1024 bytes. Abbreviated kbyte; Kbyte. Symbolized K. { 'kil·ə,bīt }

kilohm [ELEC] A unit of electrical resistance equal to 1000 ohms. Abbreviated KΩ; kohm. { 'kil,ōm }

kilomegacycle *See* gigahertz. { ˌkil·ə'meg·əˌsī·kəl }

kilomegahertz *See* gigahertz. { ˌkil·ə'meg·əˌhərtz }

kilovar [ELEC] A unit equal to 1000 volt-amperes reactive. Abbreviated kvar. { 'kil·əˌvär }

kilovolt [ELEC] A unit of potential difference equal to 1000 volts. Abbreviated kV. { 'kil·əˌvōlt }

kilovolt-ampere [ELEC] A unit of apparent power in an alternating-current circuit, equal to 1000 volt-amperes. Abbreviated kVA. { 'kil·əˌvōlt 'amˌpir }

kilovoltmeter [ELEC] A voltmeter which measures potential differences on the order of several kilovolts. { ˌkil·əˌvōltˌmēd·ər }

kilovolts peak [ELECTR] The peak voltage applied to an x-ray tube, expressed in kilovolts. Abbreviated kVp. { 'kil·əˌvōlts ˌpēk }

kilowatt-hour [ELEC] A unit of energy or work equal to 1000 watt-hours. Abbreviated kWh; kW-hr. Also known as Board of Trade Unit. { 'kil·əˌwät ˌaůr }

K-indicator *See* K-display. { 'kā ˌin·dəˌkād·ər }

kinescope *See* picture tube. { 'kin·əˌskōp }

Kingdon trap [ELEC] A thin charged wire for confining charged particles; ions are attracted toward the wire, but their angular momentum causes them to spiral around the wire in trajectories that have a low probability of hitting the wire. { 'kin·dən trap }

Kirchhoff's current law [ELEC] The law that at any given instant the sum of the instantaneous values of all the currents flowing toward a point is equal to the sum of instantaneous values of all the currents flowing away from the point. Also known as Kirchhoff's first law. { 'kərkˌhōfs 'kə·rənt ˌlȯ }

Kirchhoff's first law *See* Kirchhoff's current law. { 'kərkˌhōfs 'fərst ˌlȯ }

Kirchhoff's law [ELEC] Either of the two fundamental laws dealing with the relation of currents at a junction and voltages around closed loops in an electric network; they are known as Kirchhoff's current law and Kirchhoff's voltage law. { 'kərkˌhōfs ˌlȯ }

Kirchhoff's second law *See* Kirchhoff's voltage law. { 'kərkˌhōfs 'sek·ənd ˌlȯ }

Kirchhoff's voltage law [ELEC] The law that at each instant of time the algebraic sum of the voltage rises around a closed loop in a network is equal to the algebraic sum of the voltage drops, both being taken in the same direction around the loop. Also known as Kirchhoff's second law. { 'kərkˌhōfs 'vōl·tij ˌlȯ }

Kiviat graph [COMPUT SCI] A circular diagram used in computer performance evaluation, in which variables are plotted on axes of the circle with 0% at the center of the circle and 100% at the circumference, and variables which are "good" and "bad" as they approach 100% are plotted on alternate axes. { 'kiv·ē·ətˌgraf }

klaxon [ENG ACOUS] A diaphragm horn sometimes operated by hand. { 'klak·sən }

kludge [COMPUT SCI] A poorly designed data-processing system composed of ill-fitting mismatched components. { klüj }

klystron [ELECTR] A type of beam power tube used often in radar and other microwave applications, in which the beam of electrons passes through radio-frequency resonant cavities, or variations, to effect the interaction between the electrons and the signal being amplified or produced. { 'klīˌsträn }

klystron generator [ELECTR] Klystron tube used as a generator, with its second cavity or catcher directly feeding waves into a waveguide. { 'klī ˌsträn ˌjen·əˌrād·ər }

klystron oscillator *See* velocity-modulated oscillator. { 'klīˌsträn ˌjäs·əˌlād·ər }

klystron repeater [ELECTR] Klystron tube operated as an amplifier and inserted directly in a waveguide in such a way that incoming waves velocity-modulate the electron stream emitted from a heated cathode; a second cavity converts the energy of the electron clusters into waves of the original type but of greatly increased amplitude and feeds them into the outgoing guide. { 'klīˌsträn riˌpēd·ər }

knee frequency *See* break frequency. { 'nē ˌfrē·kwən·sē }

knife switch [ELEC] An electric switch consisting of a metal blade hinged at one end to a stationary jaw, so that the blade can be pushed over to make contact between spring clips. { 'nīf ˌswich }

Knill-Laflamme bound [COMPUT SCI] In the theory of quantum computation, a necessary condition for an algorithm that encodes N logical qubits into N' carrier qubits (with N' larger than N) to correct any error on any M carrier qubits; namely, that N' be equal to or larger than 4M + N. { kə ¦nil lə¦fläm ¦baund }

knob-and-tube wiring [ELEC] An electric wiring method used for light and power circuits that uses open insulated wiring on solid insulators; now obsolete and illegal in most countries. { ¦näb ən 'tüb ˌwir·iŋ }

knowbot [COMPUT SCI] A program which, when given a request, searches and retrieves information on the Internet. Also known as intelligent agent; knowledge robot. { 'nōˌbät }

knowledge base [COMPUT SCI] A collection of facts, assumptions, beliefs, and heuristics that are used in combination with a database to achieve desired results, such as a diagnosis, an interpretation, or a solution to a problem. { 'näl·ij ˌbās }

knowledge-based system [COMPUT SCI] A computer system whose usefulness derives primarily from a data base containing human knowledge in a computerized format. { 'näl·ij ˌbāst ˌsis·təm }

knowledge discovery in databases [COMPUT SCI] The process of identifying valid, novel, potentially useful, and ultimately under-standable structure in data. Abbreviated KDD. { ¦näl·ij di¦skəv·ə·rē in 'dad·əˌbās·əz }

knowledge engineer [COMPUT SCI] An individual who constructs the knowledge base of an expert system. { 'näl·ij ˌen·jəˌnir }

knowledge robot *See* knowbot. { 'näl·ij ¦rōˌbät }

known-good die [ELECTR] An unpackaged, fully tested integrated circuit chip. { ˌnōn ¦gud 'dī }

kohm *See* kilohm. { ¦kā¦ōm }

krypton lamp [ELEC] An arc lamp filled with krypton; one type pierces fog for 1000 feet (300 meters) or more and is used to light airplane runways at night. { 'krip·tänˌlamp }

KSAM *See* keyed sequential access method. { 'kāˌsam }

KSA service *See* K-band single-access service. { ¦kā¦es'āˌsər·vəs }

K-scan *See* K-display. { 'kāˌskan }

K-scope *See* K-display. { 'kāˌskōp }

KSR *See* keyboard send/receive.

Ku band [COMMUN] A band of frequencies extending from 15.35 to 17.25 gigahertz, corresponding to wavelengths of 1.95 to 1.74 centimeters. { 'kyüˌband *or* ¦kā¦yüˌband }

Ku-band fixed satellite service [COMMUN] Satellite communication at and near the Ku band, with the uplink frequency in bands from 12.75 to 13.25 gigahertz and 14.0 to 14.5 gigahertz and the downlink frequency in a band from 10.7 to 11.7 gigahertz. { 'kyü bandˌfikst 'sad·əlˌīt sər·vis }

Kundt effect [OPTICS] **1.** The occurrence of a very large magnetic rotation when polarized light passes through very thin films of pure ferromagnetic materials. **2.** *See* Faraday effect. { 'kúnt iˌfekt }

kV *See* kilovolt.

kVA *See* kilovolt-ampere.

kvar *See* kilovar. { 'kāˌvär }

kVp *See* kilovolts peak.

kWh *See* kilowatt-hour.

kW-hr *See* kilowatt-hour.

L

label [COMPUT SCI] A data item that serves to identify a data record (much in the same way as a key is used), or a symbolic name used in a program to mark the location of a particular instruction or routine. ['lā·bəl]

label alignment [COMPUT SCI] The manner in which text is aligned in the cells of a particular spreadsheet. ['lā·bəl ə,līn·mənt]

label constant *See* location constant. ['lā·bəl ,kän·stənt]

label data type [COMPUT SCI] A scalar data type that refers to locations in the computer program. ['lā·bəl 'dad·ə ,tīp]

label record [COMPUT SCI] A tape record containing information concerning the file on that tape, such as format, record length, and block size. ['lā·bəl ,re·kərd]

lablle oscillator [ELECTR] An oscillator whose frequency is controlled from a remote location by wire or radio. ['lā,bīl 'äs·ə,lād·ər]

labor grade *See* job class. ['lā·bər ,grād]

lacing [ELEC] Tying insulated wires together to support each other and form a single neat cable, with separately laced branches. ['lās·iŋ]

ladder attenuator [ELECTR] A type of ladder network designed to introduce a desired, adjustable loss when working between two resistive impedances, one of which has a shunt arm that may be connected to any of various switch points along the ladder. ['lad·ər ə'ten·yə,wād·ər]

ladder diagram [CONT SYS] A diagram used to program a programmable controller, in which power flows through a network of relay contacts arranged in horizontal rows called rungs between two vertical rails on the side of the diagram containing the symbolic power. ['lad·ər ,dī·ə ,gram]

ladder network [ELECTR] A network composed of a sequence of H, L, T, or pi networks connected in tandem; chiefly used as an electric filter. Also known as series-shunt network. ['lad·ər 'net ,wərk]

laddic [ELECTR] Multiaperture magnetic structure resembling a ladder, used to perform logic functions; operation is based on a flux change in the shortest available path when adjacent rungs of the ladder are initially magnetized with opposite polarity. ['lad·ik]

lag [ELECTR] A persistence of the electric charge image in a camera tube for a small number of frames. [lag]

lagging coil [ELEC] A small coil used to compensate for the lagging current in the voltage coil of an alternating-current watthour meter. ['lag·iŋ ,kȯil]

lagging current [ELEC] An alternating current that reaches its maximum value up to 90° behind the voltage that produces it. ['lag·iŋ ,kə·rənt]

lagging load *See* inductive load. ['lag·iŋ ,lōd]

lag-lead network *See* lead-lag network. ['lag 'lēd ,net,wərk]

lag network *See* integral network. ['lag ,net,wərk]

lag time [ELEC] The time between the application of current and rupture of the circuit within the detonator. ['lag ,tīm]

Lalande cell [ELEC] A type of wet cell that uses a zinc anode and cupric oxide cathode cast as flat plates or hollow cylinders, and an electrolyte of sodium hydroxide in aqueous solution (caustic soda). [lə'länd ,sel]

laminated contact [ELEC] Switch contact made up of a number of laminations, each making individual contact with the opposite conducting surface. ['lam·ə,nād·əd 'kän,takt]

laminography *See* sectional radiography. [,lam·ə 'näg·rə·fē]

lamp [ENG] A device that produces light, such as an electric lamp. [lamp]

lamp bank [ELEC] A number of incandescent lamps connected in parallel or series to serve as a resistance load for full-load tests of electric equipment. ['lamp ,baŋk]

lamp cord [ELEC] Two twisted or parallel insulated wires, usually no. 18 or no. 20, used chiefly for connecting electric equipment to wall outlets. ['lamp ,kȯrd]

lamp depreciation [ELEC] The decrease in amount of light emitted by a lamp during its operating life. ['lamp di,prē·shē,ā·shən]

lampholder [ELEC] A device designed to connect an electric lamp to a circuit and to support it mechanically. ['lamp,hōld·ər]

lamp inrush current [ELEC] The surge of current that occurs when an incandescent lamp is turned on. ['lamp 'in,rəsh ,kər·ənt]

LAN *See* local-area network. [lan]

land [ELECTR] **1.** One of the regions between pits on a track on an optical disk. **2.** *See* terminal area. [land]

land-earth station [COMMUN] A facility that routes calls from mobile stations via satellite

to and from terrestrial telephone networks. Abbreviated LES. { ¦land ¦ərth ˌstā·shən }

land effect *See* coastal refraction. { 'land iˌfekt }

landing zone [COMPUT SCI] The data-free area on the surface of a hard disk over which the read-write head comes to rest when the computer is shut off and the disk stops rotating. { 'land·iŋ ˌzōn }

landline [ELEC] A communications cable on or under the earth's surface, in contrast to a submarine cable. { 'lanˌlīn }

land mobile-satellite service [COMMUN] A mobile-satellite service in which the mobile earth stations are located on land. Abbreviated LMSS. { ¦land ˌmō·bəl 'sad·əlˌīt ˌsər·vəs }

land mobile service [COMMUN] Mobile service between base stations and mobile stations, or between land mobile stations. { 'land ¦mō·bəl ¦sər·vəs }

land mobile station [COMMUN] Mobile station in the land mobile service, capable of surface movement within the geographical limits of a country or continent. { 'land ¦mō·bəl ¦stā·shən }

land return *See* ground clutter. { 'land riˌtərn }

land station [COMMUN] Station in the mobile service not intended for operation while in motion. { 'land ˌstā·shən }

land transportation frequency bands [COMMUN] A group of radio-frequency bands between 25 megahertz and 30,000 megahertz allocated for use by taxicabs, railroads, buses, and trucks. { 'land ˌtranz·pərˌtā·shən 'frē·kwən·sē ˌbanz }

land transportation radio services [COMMUN] Any service of radio communications operated by and for the sole use of certain land transportation carriers, the radio transmitting facilities of which are defined as fixed, land, or mobile stations. { 'land ˌtranz·pərˌtā·shən 'rād·ē·ō ˌsər·vəs·əz }

Langevin ion-mobility theories [ELECTR] Two theories developed to calculate the mobility of ions in gases; the first assumes that atoms and ions interact through a hard-sphere collision and have a constant mean free path, while the second assumes that there is an attraction between atoms and ions arising from the polarization of the atom in the ion's field, in addition to hard-sphere repulsion for close distances of approach. { länzh·van ¦īˌän mō'bil·əd·ē ˌthē·ə·rēz }

Langevin ion-recombination theory [ELECTR] A theory predicting the rate of recombination of negative with positive ions in an ionized gas on the assumption that ions of opposite sign approach one another under the influence of mutual attraction, and that their relative velocities are determined by ion mobilities; applicable at high pressures, above 1 or 2 atmospheres. { länzh·van ¦īˌän rēˌkäm·bə'nā·shən ˌthē·ə·rē }

Langmuir-Child equation *See* Child's law. { 'laŋ ˌmyůr 'chīld iˌkwā·zhən }

Langmuir dark space [ELECTR] A nonluminous region surrounding a negatively charged probe inserted in the positive column of a glow discharge. { 'laŋˌmyůr 'därk ˌspās }

Langmuir diffusion pump [ENG] A type of diffusion pump in which the mercury vapor emerges from a nozzle, giving it motion in a direction away from the high-vacuum side of the pump. { ¦laŋ·myůr di'fyü·zhən ˌpəmp }

language [COMPUT SCI] The set of words and rules used to construct sentences with which to express and process information for handling by computers and associated equipment. { 'laŋ·gwij }

language converter [COMPUT SCI] A device which translates a form of data (such as that on microfilm) into another form of data (such as that on magnetic tape). { 'laŋ·gwij kənˌvərd·ər }

language subset [COMPUT SCI] A portion of a programming language that can be used alone; usually applied to small computers that do not have the capability of handling the complete language. { 'laŋ·gwij 'səbˌset }

language translator [COMPUT SCI] **1.** Any assembler or compiler that accepts human-readable statements and produces equivalent outputs in a form closer to machine language. **2.** A program designed to convert one computer language to equivalent statements in another computer language, perhaps to be executed on a different computer. **3.** A routine that performs or assists in the performance of natural language translations, such as Russian to English, or Chinese to Russian. { 'laŋ·gwij ˌtranzˌlād·ər }

L antenna [ELECTROMAG] An antenna that consists of an elevated horizontal wire having a vertical down-lead connected at one end. { 'el anˌten·ə }

lap dissolve [ELECTR] Changeover from one video scene to another so that the new picture appears gradually as the previous picture simultaneously disappears. { 'lap diˌzälv }

lapel microphone [ENG ACOUS] A small microphone that can be attached to a lapel or pocket on the clothing of the user, to permit free movement while speaking. { lə'pel ¦mī·krəˌfōn }

lapping [ELECTR] Moving a quartz, semiconductor, or other crystal slab over a flat plate on which a liquid abrasive has been poured, to obtain a flat polished surface or to reduce the thickness a carefully controlled amount. { 'lap·iŋ }

laptop computer *See* notebook computer. { 'lap ˌtäp kəmˌpyüd·ər }

lap winding [ELEC] A two-layer winding in which each coil is connected in series to the adjacent coil. { 'lap ˌwīn·diŋ }

large-scale integrated circuit [ELECTR] A very complex integrated circuit, which contains well over 100 interconnected individual devices, such as basic logic gates and transistors, placed on a single semiconductor chip. Abbreviated LSI circuit. Also known as chip circuit; multiple-function chip. { 'lärj ¦skāl ˌint·əˌgrād·əd 'sər·kət }

large-scale integrated memory *See* semiconductor memory. { 'lärj ¦skāl ˌint·əˌgrād·əd 'mem·rē }

large-systems control theory [CONT SYS] A branch of the theory of control systems concerned with the special problems that arise in the design of control algorithms (that is, control policies and strategies) for complex systems. { 'lärj ˌsis·təmz kən'trōl ˌthē·ə·rē }

laryngophone [ENG ACOUS] A microphone designed to be placed against the throat of a speaker, to pick up voice vibrations directly without responding to background noise. { lə'riŋ·gə ˌfōn }

LASCR *See* light-activated silicon controlled rectifier.

LASCS *See* light-activated silicon controlled switch.

laser [OPTICS] An active electron device that converts input power into a very narrow, intense beam of coherent visible or infrared light; the input power excites the atoms of an optical resonator to a higher energy level, and the resonator forces the excited atoms to radiate in phase. Derived from light amplification by stimulated emission of radiation. { 'lā·zər }

laser amplifier [ELECTR] A laser which is used to increase the output of another laser. Also known as light amplifier. { 'lā·zər ¦am·pləˌfī·ər }

laser communication [COMMUN] Optical communication in which the light source is a laser whose beam is modulated for voice, video, or data communication over wide information bandwidths, typically 1 gigahertz or more. { 'lā·zər kəˌmyü·nə'kā·shən }

laser diode *See* semiconductor laser. { 'lā·zər ¦dīˌōd }

laser disk storage *See* optical disk storage. { 'lā·zər ¦disk ˌstór·ij }

laser flash tube [ELECTR] A high-power, air-cooled or water-cooled xenon flash tube designed to produce high-intensity flashes for pumping applications. { 'lā·zər 'flash ˌtüb }

laser-holography storage [COMPUT SCI] A computer storage technology in which information is stored in microscopic spots burned in a holographic substrate by a laser beam, and is read by sensing a lower-energy laser beam that is transmitted through these spots. { 'lā·zər hō ¦läg·rə·fē ˌstór·ij }

laser memory [COMPUT SCI] A computer memory in which a controlled laser beam acts on individual and extremely small areas of a photosensitive or other type of surface, for storage and subsequent readout of digital data or other types of information. { 'lā·zər ˌmem·rē }

laser radiation detector [ELECTR] A photodetector that responds primarily to the coherent visible, infrared, or ultraviolet light of a laser beam. { 'lā·zər ˌrād·ē'ā·shən diˌtek·tər }

laser recorder [COMMUN] An image reproducer that resembles a facsimile system, in which a laser beam is initially modulated by the video signal and swept over photographic film or paper to reproduce an image received over wire or radio communication systems. { 'lā·zər ri'kȯrd·ər }

laser scriber [ENG] A laser-cutting setup used in place of a diamond scriber for dicing thin slabs of silicon, gallium arsenide, and other semiconductor materials used in the production of semiconductor diodes, transistors, and integrated circuits; also used for scribing sapphire and ceramic substrates. { 'lā·zər ¦skrīb·ər }

laser threshold [ELECTR] The minimum pumping energy required to initiate lasing action in a laser. { 'lā·zər ¦thresh·hōld }

laser-triggered switch [ELEC] A high-voltage high-power switch that consists of a spark gap triggered into conduction by a laser beam. { 'lā·zər ˌtrig·ərd 'swich }

last-mask read-only memory [COMPUT SCI] A read-only memory in which the final mask used in the fabrication process determines the connections to the internal transistors, and these connections in turn determine the data pattern that will be read out when the cell is accessed. Also known as contact-mask read-only memory. { 'last ¦mask ¦rēd ¦ōn·lē 'mem·rē }

latch [ELECTR] An electronic circuit that reverses and maintains its state each time that power is applied. { lach }

latch-in relay [ELEC] A relay that maintains its contacts in the last position assumed, even without coil energization. { 'lach,in 'rēˌlā }

latch-up phenomenon [ELECTR] In a bipolar or MOS integrated circuit, the generation of photocurrents by ionizing radiation which can provide a trigger signal for a parasitic *pnpn* circuit and possibly result in permanent damage or operational failure if the circuit remains in this state. { 'lach ˌəp fəˌnäm·əˌnän }

late binding [COMPUT SCI] The assignment of data types (such as integer or string) to variables at the time of execution of a computer program, rather than during the compilation phase. { ¦lāt 'bīnd·iŋ }

latency [COMPUT SCI] The waiting time between the order to read/write some information from/to a specified place and the beginning of the data-read/write operation. { 'lat·ən·sē }

lateral parity check [COMPUT SCI] The number of one bits counted across the width of the magnetic tape; this number plus a one or a zero must always be odd (or even), depending upon the manufacturer. { 'lad·ə·rəl 'par·əd·ē ˌchek }

lateral recording [ENG ACOUS] A type of disk recording in which the groove modulation is parallel to the surface of the recording medium so that the cutting stylus moves from side to side during recording. { 'lad·ə·rəl ri'kȯrd·iŋ }

lattice filter [ELECTR] An electric filter consisting of a lattice network whose branches have L-C parallel-resonant circuits shunted by quartz crystals. { 'lad·əs ˌfil·tər }

lattice network [ELEC] A network that is composed of four branches connected in series to form a mesh; two nonadjacent junction points serve as input terminals, and the remaining two junction points serve as output terminals. { 'lad·əs 'netˌwərk }

lattice winding [ELEC] A winding made of lattice coils and used for electric machines. { 'lad·əs ˌwīn·diŋ }

launching [ELECTROMAG] The process of transferring energy from a coaxial cable or transmission line to a waveguide. { 'lȯn·chiŋ }

Lauritsen electroscope [ELEC] A rugged and sensitive electroscope in which a metallized

quartz fiber is the sensitive element. { 'laù·rət·sən i'lek·trə,skōp }

lawnmower [ELECTR] Type of radio-frequency preamplifier used with radar receivers. { 'lòn ,mō·ər }

law of electric charges [ELEC] The law that like charges repel, and unlike charges attract. { 'lò əv i¦lek·trik 'chärj·əz }

law of electrostatic attraction *See* Coulomb's law. { 'lò əv i¦lek·trə¦stad·ik ə'trak·shən }

Lawrence tube *See* chromatron. { 'lär·əns ,tüb }

layer [COMPUT SCI] One of the divisions within which components or functions are isolated in a computer system with layered architecture or a communications system with layered protocols. { 'lā·ər }

layer capacitance *See* cathode interface capacitance. { 'lā·ər kə'pas·əd·əns }

layered architecture [COMPUT SCI] A technique used in designing computer software, hardware, and communications in which system or network components are isolated in layers so that changes can be made in one layer without affecting the others. { 'lā·ərd 'är·kə,tek·chər }

layered-protocols technique [COMMUN] A technique for isolating the functions required in a data communications network so that these functions can be set up in a modular fashion and changes can be made in one area without affecting the others. { 'lā·ərd 'prōd·ə,kòlz tek'nēk }

layer impedance *See* cathode interface impedance. { 'lā·ər im'pēd·əns }

layer winding [ELEC] Coil-winding method in which adjacent turns are laid evenly and side by side along the length of the coil form; any number of additional layers may be wound over the first, usually with sheets of insulating material between the layers. { 'lā·ər ,wīn·diŋ }

layout character [COMPUT SCI] A control character that determines the form in which the output data generated by a printer or display device are arranged. Also known as format effector. { 'lā ,aùt ,kar·ik·tər }

lay ratio [ELEC] The ratio of the axial length of one complete turn of the helix formed by the core of a cable or the wire of a stranded conductor, to the mean diameter of the cable. { 'lā ,rā·shō }

lazy evaluation *See* demand-driven execution. { 'lā·zē i,val·yə'wā·shən }

lazy H antenna [ELECTROMAG] An antenna array in which two or more dipoles are stacked one above the other to obtain greater directivity. { ¦lā·zē 'āch an,ten·ə }

L band [COMMUN] A band of radio frequencies between 1 and 2 gigahertz. { 'el ,band }

LCD *See* liquid crystal display.

LC filter *See* inductive filter. { ¦el¦sē ,fil·tər }

LC ratio [ELEC] The inductance of a circuit in henrys divided by capacitance in farads. { ¦el ¦sē ,rā·shō }

L-display [ELECTR] A radar display format in which an echo signal appears as two horizontal deflections, left and right, from a vertical reference line, as associated with a two-beam tracking radar antenna; equal amplitudes indicating no pointing error and position on the vertical axis indicating range. Also known as L-indicator; L-scan; L-scope. { 'el di,splā }

LDM *See* limited-distance modem.

lead [ELEC] A wire used to connect two points in a circuit. { led }

lead-acid battery [ELEC] A storage battery in which the electrodes are grids of lead containing lead oxides that change in composition during charging and discharging, and the electrolyte is dilute sulfuric acid. { 'led ,as·əd 'bad·ə·rē }

lead angle [ENG] The angle that the tangent to a helix makes with the plane normal to the axis of the helix. { 'lēd ,aŋ·gəl }

lead compensation [CONT SYS] A type of feedback compensation primarily employed for stabilization or for improving a system's transient response; it is generally characterized by a series compensation transfer function of the type

$$G_c(s) = K\frac{(s-z)}{(s-p)}$$

where $z < p$ and K is a constant. { 'lēd ,käm·pən'sā·shən }

lead-covered cable [ELEC] A cable whose conductors are protected from moisture and mechanical damage by a lead sheath. { 'led ¦kəv·ərd 'kā·bəl }

leader [COMPUT SCI] A record which precedes a group of detail records, giving information about the group not present in the detail records; for example, "beginning of batch 17." [ENG] The unrecorded length of magnetic tape that enables the operator to thread the tape through the drive and onto the take-up reel without losing data or recorded music, speech, or such. { 'lēd·ər }

leader label [COMPUT SCI] A record appearing at the beginning of a magnetic tape to uniquely identify the tape as one required by the system. { 'lēd·ər ,lā·bəl }

lead-in [ELEC] A single wire used to connect a single-terminal outdoor antenna to a receiver or transmitter. Also known as down-lead. { 'lēd ,in }

leading character elimination [COMPUT SCI] A method of data compression used for dictionaries that are stored in alphabetical order, in which the coding for each word has two parts: the number of characters in common with the previous word, and the unique suffix. { ¦lēd·iŋ 'kar·ik·tər i,lim·ə'nā·shən }

leading current [ELEC] An alternating current that reaches its maximum value up to 90°

ahead of the voltage that produces it. { 'lēd·iŋ ¦kə·rənt }

leading load [ELEC] Load that is predominately capacitive, so that its current leads the voltage applied to the load. { 'lēd·iŋ ¦lōd }

leading pad [COMPUT SCI] Characters that fill unused space at the left end of a data field. { 'lēd·iŋ 'pad }

leading phase [ELEC] In three-phase power measurement, the phase whose voltage is leading upon that of one of the other phases by 120°. { 'lēd·iŋ ¦fāz }

lead-in insulator [ELEC] A tubular insulator inserted in a hole drilled through a wall, through which the lead-in wire can be brought into a building. { 'lēd,in 'in·sə,lād·ər }

lead-lag ballast [ELEC] A ballast for a pair of fluorescent lamps, one operating on leading current and the other on lagging current, to diminish the stroboscopic effect. { ¦lēd 'lag ,bal·əst }

lead-lag network [CONT SYS] Compensating network which combines the characteristics of the lag and lead networks, and in which the phase of a sinusoidal response lags a sinusoidal input at low frequencies and leads it at high frequencies. Also known as lag-lead network. { 'lēd 'lag 'net ,wərk }

lead network See derivative network. { 'lēd ,net ,wərk }

lead sulfide cell [ELECTR] A cell used to detect infrared radiation; either its generated voltage or its change of resistance may be used as a measure of the intensity of the radiation. { 'led ¦səl,fīd ,sel }

leaf See terminal vertex. { lēf }

leakage conductance [ELEC] The conductance of the path over which leakage current flows; it is normally a low value. { 'lēk·ij kən¦dək·təns }

leakage current [ELEC] **1.** Undesirable flow of current through or over the surface of an insulating material or insulator. **2.** The flow of direct current through a poor dielectric in a capacitor. [ELECTR] The alternating current that passes through a rectifier without being rectified. { 'lēk·ij ,kə·rənt }

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leakage indicator [ELEC] An instrument used to measure or detect current leakage from an electric system to earth. Also known as earth detector. { 'lēk·ij ,in·də,kād·ər }

leakage radiation [ELECTROMAG] In a radio transmitting system, radiation from anything other than the intended radiating system. { 'lēk·ij ,rād·ē'ā·shən }

leakage resistance [ELEC] The resistance of the path over which leakage current flows; it is normally high. { 'lēk·ij ri¦zis·təns }

leaky [ELEC] Pertaining to a condition in which the leakage resistance has dropped so much below its normal value that excessive leakage current flows; usually applied to a capacitor. { 'lēk·ē }

leaky-wave antenna [ELECTROMAG] A wide-band microwave antenna that radiates a narrow beam whose direction varies with frequency; it is fundamentally a perforated waveguide, thin enough to permit flush mounting for aircraft and missile radar applications. { 'lēk·ē ¦wāv an 'ten·ə }

leapfrog test [COMPUT SCI] A computer test using a special program that performs a series of arithmetical or logical operations on one group of storage locations, transfers itself to another group, checks the correctness of the transfer, then begins the series of operations again; eventually, all storage positions will have been tested. { 'lēp,fräg ,test }

learning control [CONT SYS] A type of automatic control in which the nature of control parameters and algorithms is modified by the actual experience of the system. { 'lərn·iŋ kən,trōl }

learning machine [COMPUT SCI] A machine that is capable of improving its future actions as a result of analysis and appraisal of past actions. { 'lər·niŋ mə,shēn }

leased facility [COMMUN] A collection of communication lines dedicated to a particular service; sometimes the lines have a predetermined path through system switching equipment. { 'lēst fə'sil·əd·ē }

least frequently used [COMPUT SCI] A technique for using main storage efficiently, in which new data replace data in storage locations that have been used least often, as determined by an algorithm. { 'lēst ¦frē·kwənt·lē 'yüzd }

least recently used [COMPUT SCI] A technique for using main storage efficiently, in which new data replace data in storage locations that have not been accessed for the longest period, as determined by an algorithm. { 'lēst ¦rē·sənt·lē ,yüzed }

least significant bit [COMPUT SCI] The bit that carries the lowest value or weight in binary notation for a numeral; for example, when 13 is represented by binary 1101, the 1 at the right is the least significant bit. Abbreviated LSB. { ¦lēst sig¦nif·i·kənt 'bit }

least significant character [COMPUT SCI] The character in the rightmost position in a number or word. { ¦lēst sig¦nif·i·kənt 'kar·ik·tər }

Leclanché cell [ELEC] The common dry cell, which is a primary cell having a carbon positive electrode and a zinc negative electrode in an electrolyte of sal ammoniac and a depolarizer. { lə¦klan¦shā ,sel }

LED See light-emitting diode.

Leduc current [ELEC] An asymmetrical alternating current obtained from, or similar to that obtained from, the secondary winding of an induction coil; used in electrobiology. { lə'dük ,kə·rənt }

left-hand taper [ELEC] A taper in which there is greater resistance in the counterclockwise half of the operating range of a rheostat or

potentiometer (looking from the shaft end) than in the clockwise half. { 'left ˌhand 'tā·pər }

left-justify [COMPUT SCI] To shift the contents of a register so that the left, or most significant, digit is at some specified position. { 'left 'jəs·tə·fī }

left value [COMPUT SCI] The memory address of a symbolic variable in a computer program. Abbreviated lvalue. { 'left ˌval·yü }

leg [COMPUT SCI] The sequence of instructions that is followed in a computer routine from one branch point to the next. { leg }

legacy system [COMPUT SCI] A computer system that has been in operation for a long time, and whose functions are too essential to be disrupted by upgrading or integration with another system. { 'leg·ə·sē ˌsis·təm }

LEIT *See* light emission via inelastic tunneling.

LEIT device [ELECTR] A light source consisting of two crossed, thin metal-film strips separated by a very thin insulating layer and attached to a battery to produce light emission via inelastic tunneling (LEIT). { ¦el¦ē¦ī¦tē di,vīs }

Lenard rays [ELECTR] Cathode rays produced in air by a Lenard tube. { 'lā,närt ˌrāz }

Lenard tube [ELECTR] An early experimental electron-beam tube that had a thin glass or metallic foil window at the end opposite the cathode, through which the electron beam could pass into the atmosphere. { 'lā,närt ˌtüb }

length block [COMPUT SCI] The total number of records, words, or characters contained in one block. { 'leŋkth ˌbläk }

lengthened dipole [ELECTROMAG] An antenna element with lumped inductance to compensate an end loss. { 'leŋk·thənd 'dī,pōl }

lens [COMMUN] A dielectric or metallic structure that is highly transparent to radio waves and can bend them to produce a desired radiation pattern; used with antennas for radar and microwave relay systems. { lenz }

lens antenna [ELECTROMAG] A microwave antenna in which a dielectric lens is placed in front of the dipole or horn radiator to concentrate the radiated energy into a narrow beam or to focus received energy on the receiving dipole or horn. { 'lenz an,ten·ə }

LES *See* land-earth station.

Leslie effect [ENG ACOUS] A dynamic timbre-changing effect created by rotating one or more directional speakers inside a cabinet such that a mixture of Doppler-shifted reflections is generated in the output of an electronic instrument. { 'lez·lē i,fekt }

letter [COMMUN] A character used in an alphabet generally representing one or more sounds of a spoken language. { 'led·ər }

letter code [COMPUT SCI] A Baudot code function which cancels errors by causing the receiving terminal to print nothing. { 'led·ər ˌkōd }

letter-perfect printer *See* letter-quality printer. { 'led·ər ¦pər·fekt 'print·ər }

letter-quality printer [COMPUT SCI] A printer that produces high-quality output. Also known as correspondence printer; letter-perfect printer. { 'led·ər ¦kwäl·əd·ē 'print·ər }

letters shift [COMMUN] **1.** A movement of a teletypewriter carriage which permits printing of alphabetic characters in an appropriate, generally linear sequence. **2.** The control which actuates this movement. Abbreviated LTRS. { 'led·ərz 'shift }

level [COMMUN] **1.** A specified position on an amplitude scale (for example, magnitude) applied to a signal waveform, such as reference white level and reference black level in a video signal. **2.** A range of allowed picture parameters and combinations of picture parameters in the digital television system. [COMPUT SCI] **1.** The status of a data item in COBOL language indicating whether this item includes additional items. **2.** *See* channel. [ELEC] A single bank of contacts, as on a stepping relay. [ELECTR] **1.** The difference between a quantity and an arbitrarily specified reference quantity, usually expressed as the logarithm of the ratio of the quantities. **2.** A charge value that can be stored in a given storage element of a charge storage tube and distinguished in the output from other charge values. { 'lev·əl }

level 1 cache *See* primary cache. { ¦lev·əl 'wən ˌkash }

level 2 cache *See* secondary cache. { ˌlev·əl ˌtü 'kash }

level compensator [ELECTR] **1.** Automatic transmission-regulating feature or device used to minimize the effects of variations in amplitude of the received signal. **2.** Automatic gain control device used in the receiving equipment of a telegraph circuit. { 'lev·əl 'käm·pənˌsād·ər }

level converter [ELECTR] An amplifier that converts nonstandard positive or negative logic input voltages to standard DTL or other logic levels. { 'lev·əl kənˌvərd·ər }

level indicator [ENG ACOUS] An indicator that shows the audio voltage level at which a recording is being made, may be a volume-unit meter, neon lamp, or cathode-ray tuning indicator. { 'lev·əl 'in·dəˌkād·ər }

level set [COMPUT SCI] A revision of a software package in which most or all of the executable programs are replaced with improved versions. { 'lev·əl ˌset }

level shifting [ELECTR] Changing the logic level at the interface between two different semiconductor logic systems. { 'lev·əl ˌshif·tiŋ }

lever switch [ELEC] A switch having a lever-shaped operating handle. { 'lev·ər ˌswich }

Lewis-Rayleigh afterglow [ELECTR] A golden yellow light emitted by nitrogen gas following the passage of an electric discharge, associated with recombination of nitrogen atoms. { ¦lü·əs ¦rā·lē 'af·tərˌglō }

Leyden jar [ELEC] An early type of capacitor, consisting simply of metal foil sheets on the inner and outer surfaces of a glass jar. { 'līd·ənˌjär }

LF *See* low-frequency.

LF loran *See* low-frequency loran. { ¦el¦ef 'lōrˌan }

Liapunov function *See* Lyapunov function. { 'lyä·pü·nóf ˌfəŋk·shən }

librarian [COMPUT SCI] The program which maintains and makes available all programs and

routines composing the operating system. ['lī,brer·ē·ən]

library [COMPUT SCI] **1.** A computerized facility containing a collection of organized information used for reference. **2.** An organized collection of computer programs together with the associated program listings, documentation, users' directions, decks, and tapes. ['lī,brer·ē]

library routine [COMPUT SCI] A computer program that is part of some program library. ['lī,brer·ē rü,tēn]

library software [COMPUT SCI] The collection of programs and routines in the library of a computer system. ['lī,brer·ē 'sóft,wer]

library tape [COMPUT SCI] A magnetic tape that is kept in a stored, indexed collection for ready use and is made generally available. ['lī,brer·ē ,tāp]

Lichenberger figures *See* Lichtenberg figures. ['lī·kən,bər·gər ,fig·yərz]

Lichtenberg figures [ELEC] Patterns produced on a photographic emulsion, or in fine powder spread over the surface of a solid dielectric, by an electric discharge produced by a high transient voltage. Also known as Lichenberger figures. ['lik·tən·bərg ,fig·yərz]

light-activated silicon controlled rectifier [ELECTR] A silicon controlled rectifier having a glass window for incident light that takes the place of, or adds to the action of, an electric gate current in providing switching action. Abbreviated LASCR. Also known as photo-SCR; photothyristor. ['līt ,ak·tə,vād·əd ,sil·ə·kən kən ,trōld 'rek·tə,fī·ər]

light-activated silicon controlled switch [ELECTR] A semiconductor device that has four layers of silicon alternately doped with acceptor and donor impurities, but with all four of the *p* and *n* layers made accessible by terminals; when a light beam hits the active light-sensitive surface, the photons generate electron-hole pairs that make the device turn on; removal of light does not reverse the phenomenon; the switch can be turned off only by removing or reversing its positive bias. Abbreviated LASCS. ['līt ,ak·tə,vād·əd ,sil·ə·kən kən,trōld 'swich]

light amplification by stimulated emission of radiation *See* laser. ['līt ,am·plə·fə'kā·shən bī ,stim·yə,lād·əd i,mish·ən əv ,rād·ē'ā·shən]

light amplifier [ELECTR] **1.** Any electronic device which, when actuated by a light image, reproduces a similar image of enhanced brightness, and which is capable of operating at very low light levels without introducing spurious brightness variations (noise) into the reproduced image. Also known as image intensifier. **2.** *See* laser amplifier. ['līt ,am·plə,fī·ər]

light-beam galvanometer *See* d'Arsonval galvanometer. ['līt ,bēm ,gal·və'näm·əd·ər]

light bulb *See* incandescent lamp. ['līt ,bəlb]

light carrier injection [ELECTR] A method of introducing the carrier in a facsimile system by periodic variation of the scanner light beam, the average amplitude of which is varied by the density changes of the subject copy. Also known as light modulation. ['līt 'kar·ē·ər in,jek·shən]

light chopper [ELECTR] A rotating fan or other mechanical device used to interrupt a light beam that is aimed at a phototube, to permit alternating-current amplification of the phototube output and to make its output independent of strong, steady ambient illumination. ['līt 'chäp·ər]

light emission via inelastic tunneling [ELECTR] A process in which electrons tunneling through a thin insulating layer separating two metals excite surface plasmons which then scatter from surface and structural discontinuities, radiating visible light. Abbreviated LEIT. [,līt i,mish·ən ,vē·ə ,in·ə,las·tik 'tən·əl·iŋ]

light-emitting diode [ELECTR] A rectifying semiconductor device which converts electrical energy into electromagnetic radiation. The wavelength of the emitted radiation ranges from the near-ultraviolet to the near-infrared, that is, from about 400 to over 1500 nanometers. Abbreviated LED. ['līt i,mid·iŋ 'dī,ōd]

light-gating cathode-ray tube [ELECTR] A cathode-ray tube in which the electron beam varies the transmission or reflection properties of a screen that is positioned in the beam of an external light source. ['līt ,gād·iŋ ,kath,ōd 'rā ,tüb]

light guide *See* optical fiber. ['līt ,gīd]

light gun [ELECTR] A light pen mounted in a gun-type housing. ['līt ,gən]

lighthouse tube *See* disk-seal tube. ['līt,haùs ,tüb]

lighting branch circuit [ELEC] A circuit that supplies power to outlets for lighting fixtures only. ['līd·iŋ 'branch ,sər·kət]

light meter [ENG] A small, portable device for measuring illumination; an exposure meter is a specific application, being calibrated to give photographic exposures. ['līt ,mēd·ər]

light modulation *See* light carrier injection. ['līt ,mäj·ə,lā·shən]

light modulator [ELECTR] The combination of a source of light, an appropriate optical system, and a means for varying the resulting light beam to produce an optical sound track on motion picture film. ['līt ,mäj·ə,lād·ər]

light-negative [ELECTR] Having negative photoconductivity, hence decreasing in conductivity (increasing in resistance) under the action of light. { 'līt ¦neg·ə·tiv }

lightning arrester [ELEC] A protective device designed primarily for connection between a conductor of an electrical system and ground to limit the magnitude of transient overvoltages on equipment. Also known as arrester; surge arrester. { 'līt·niŋ ə,res·tər }

lightning conductor [ELEC] A conductor designed to carry the current of a lightning discharge from a lightning rod to ground. { 'līt·niŋ kən,dək·tər }

lightning generator [ELEC] A high-voltage power supply used to generate surge voltages resembling lightning, for testing insulators and other high-voltage components. { 'līt·niŋ ,jen·ə ,rād·ər }

lightning protection [ELEC] Means, such as lightning rods and lightning arresters, of protecting electrical systems, buildings, and other property from lightning. { 'līt·niŋ prə,tek·shən }

lightning recorder *See* sferics receiver. { 'līt·niŋ ri,kȯrd·ər }

lightning rod [ELEC] A metallic rod set up on an exposed elevation of a structure and connected to a low-resistance ground to intercept lightning discharges and to provide a direct conducting path to ground for them. { 'līt·niŋ ,räd }

lightning surge [ELEC] A transient disturbance in an electric circuit due to lightning. { 'līt·niŋ ,sərj }

lightning switch [ELEC] A manually operated switch used to connect a radio antenna to ground during electrical storms, rather than to the radio receiver. { 'līt·niŋ ,swich }

light-operated switch [ELECTR] A switch that is operated by a beam or pulse of light, such as a light-activated silicon controlled rectifier. { 'līt ¦äp·ə,rād·əd 'swich }

light panel *See* electroluminescent panel. { 'līt ,pan·əl }

light pen [ELECTR] A tiny photocell or photomultiplier, mounted with or without fiber or plastic light pipe in a pen-shaped housing; it is held against a cathode-ray screen to make measurements from the screen or to change the nature of the display. { 'līt ,pen }

light-positive [ELECTR] Having positive photoconductivity; selenium ordinarily has this property. { 'līt ¦päz·ə·tiv }

light relay *See* photoelectric relay. { 'līt ,rē,lā }

light-sensitive [ELECTR] Having photoconductive, photoemissive, or photovoltaic characteristics. Also known as photosensitive. { 'līt 'sen·səd·iv }

light-sensitive cell *See* photodetector. { 'līt ¦sen·səd·iv 'sel }

light-sensitive detector *See* photodetector. { 'līt ¦sen·səd·iv di'tek·tər }

light-sensitive tube *See* phototube. { 'līt ¦sen·səd·iv 'tüb }

light sensor photodevice *See* photodetector. { 'līt ,sen·sər 'fōd·ō·di,vīs }

light stability [COMPUT SCI] In optical character recognition, the ability of an image to retain its spectral appearance when exposed to radiant energy. { 'līt stə,bil·əd·ē }

light valve [ELECTR] **1.** A device whose light transmission can be made to vary in accordance with an externally applied electrical quantity, such as volatage, current, electric field, or magnetic field, or an electron beam. **2.** Any direct-view electronic display optimized for reflecting or transmitting an image with an independent collimated light source for projection purposes. { 'līt,valv }

limit check [COMPUT SCI] A check to determine if a value entered into a computer system is within acceptable minimum and maximum values. { 'lim·ət ,chek }

limited-access data [COMPUT SCI] Data to which only authorized users have access. { 'lim·əd·əd ¦ak·ses 'dad·ə }

limited-degree-of-freedom robot [CONT SYS] Robot whose end effector can be positioned and oriented in fewer than six degrees of freedom. { 'lim·əd·əd di'grē əv 'frē·dəm 'rō,bät }

limited-distance modem [COMMUN] A modem used only for communications within a building in order to improve the signal quality where a long distance exists between the terminal and the computer. [COMPUT SCI] A device designed to transmit and receive signals over relatively short distances, typically less than 5 miles (8 kilometers). Abbreviated LDM. Also known as line driver. { 'lim·əd·əd ¦dis·təns 'mō,dem }

limited-entry decision table [COMPUT SCI] A decision table in which the condition stub specifies exactly the condition or the value of the variable. { 'lim·əd·əd ¦en·trē di'sizh·ən ,tā·bəl }

limited integrator [ELECTR] A device used in analog computers that has two input signals and one output signal whose value is proportional to the integral of one of the input signals with respect to the other as long as this output signal does not exceed specified limits. { 'lim·əd·əd 'int·ə ,grād·ər }

limited-sequence robot *See* fixed-stop robot. { 'lim·əd·əd ¦sē·kwəns 'rō,bät }

limited signal [ELECTR] Radar signal that is intentionally limited in amplitude by the dynamic range of the circuits involved; useful in some radio and radar processing. { 'lim·əd·əd 'sig·nəl }

limited space-charge accumulation mode [ELECTR] A mode of operation of a Gunn diode in which the frequency of operation is set by a resonant circuit to be much higher than the transit-time frequency so that domains have insufficient time to form while the field is above threshold and, as a result, the sample is maintained in the negative conductance state during a large fraction of the voltage cycle. Abbreviated LSA mode. { ¦lim·əd·əd ,spās ,chärj ə,kyü·myə'lā·shən,mōd }

limiter [ELECTR] An electronic circuit used to prevent the amplitude of an electronic waveform from exceeding a specified level while preserving the shape of the waveform at amplitudes less than the specified level. Also known as amplitude limiter; amplitude-limiting circuit; automatic peak limiter; clipper; clipping circuit; limiter circuit; peak limiter. ['lim·əd·ər]

limiter circuit *See* limiter. ['lim·əd·ər ˌsər·kət]

limiting [ELECTR] A desired or undesired amplitude-limiting action performed on a signal by a limiter. Also known as clipping; peak clipping. ['lim·əd·iŋ]

limit priority [COMPUT SCI] An upper bound to the dispatching priority that a task can assign to itself or any of its subtasks. ['lim·ət prī'är·əd·ē]

limit ratio [ELECTR] Ratio of peak value to limited value, or comparison of such ratios. ['lim·ət ˌrā·shō]

limit switch [ELEC] A switch designed to cut off power automatically at or near the limit of travel of a moving object controlled by electrical means. ['lim·ət ˌswich]

Lindeck potentiometer [ELEC] A potentiometer in which an unknown potential difference is balanced against a known potential difference derived from a fixed resistance carrying a variable current, the converse of most potentiometers. ['lin,dek pə,ten·chē'äm·əd·ər]

Lindemann electrometer [ELEC] A variant of the quadrant electrometer, designed for portability and insensitivity to changes in position, in which the quadrants are two sets of plates about 6 millimeters apart, mounted on insulating quartz pillars; a needle rotates about a taut silvered quartz suspension toward the oppositely charged plates when voltage is applied to it, and its movement is observed through a microscope. ['lin·də·mən ˌē,lek'träm·əd·ər]

L-indicator *See* L-display. ['el ˌin·dəˌkād·ər]

line [ELECTR] **1.** The path covered by the electron beam of a picture tube in one sweep from left to right across the screen. **2.** One horizontal scanning element in a facsimile system. **3.** *See* trace. [līn]

line and trunk group [COMMUN] A group consisting of four-wire circuits, incoming private automatic branch exchange trunks, and intertoll trunk groups. [¦līn ən ¦trəŋk ˌgrüp]

linear [CONT SYS] Having an output that varies in direct proportion to the input. ['lin·ē·ər]

linear amplifier [ELECTR] An amplifier in which changes in output current are directly proportional to changes in applied input voltage. ['lin·ē·ər 'am·plə,fī·ər]

linear array [ELECTROMAG] An antenna array in which the dipole or other half-wave elements are arranged end to end on the same straight line. Also known as collinear array. ['lin·ē·ər ə'rā]

linear-array camera [ELECTR] A solid-state television camera that has only a single row of light-sensitive elements or pixels. ['lin·ē·ər ə¦rā 'kam·rə]

linear bounded automaton [COMPUT SCI] A nondeterministic, one-tape Turing machine whose read/write head is confined to move only on a restricted section of tape initially containing the input. ['lin·ē·ər ¦baünd·əd ȯ'tām·əˌtän]

linear circuit *See* linear network. ['lin·ē·ər 'sər·kət]

linear comparator [ELECTR] A comparator circuit which operates on continuous, or nondiscrete, waveforms. Also known as continuous comparator. ['lin·ē·ər kəm'par·əd·ər]

linear computing element [ELEC] A linear circuit in an analog computer. ['lin·ē·ər kəm'pyüd·iŋ ˌel·ə·mənt]

linear conductor antenna [ELECTROMAG] An antenna consisting of one or more wires which all lie along a straight line. ['lin·ē·ər kən'dək·tər an,ten·ə]

linear control [ELEC] Rheostat or potentiometer having uniform distribution of graduated resistance along the entire length of its resistance element. ['lin·ē·ər kən'trōl]

linear control system [CONT SYS] A linear system whose inputs are forced to change in a desired manner as time progresses. ['lin·ē·ər kən'trōl ˌsis·təm]

linear detection [ELECTR] Detection in which the output voltage is substantially proportional, over the useful range of the detecting device, to the voltage of the input wave. ['lin·ē·ər di'tek·shən]

linear distortion [ELECTR] Amplitude distortion in which the output signal envelope is not proportional to the input signal envelope and no alien frequencies are involved. ['lin·ē·ər di'stȯr·shən]

linear electrical constants of a uniform line [ELEC] Series resistance, series inductance, shunt conductance, and shunt capacitance per unit length of line. ['lin·ē·ər i¦lek·trə·kəl 'kän·stəns əv ə ¦yü·nə,fȯrm 'līn]

linear electrical parameters *See* transmission-line parameters. ['lin·ē·ər i¦lek·trə·kəl pə'ram·əd·ərz]

linear feedback control [CONT SYS] Feedback control in a linear system. ['lin·ē·ər 'fēd,bak kən,trōl]

linear integrated circuit [ELECTR] An integrated circuit that provides linear amplification of signals. ['lin·ē·ər ¦int·əˌgrād·əd 'sər·kət]

linearity control [ELECTR] A cathode-ray-tube control which varies the distribution of scanning speed throughout the trace interval. Also known as distribution control. [ˌlin·ē'ar·əd·ē kən ˌtrōl]

linearization [CONT SYS] **1.** The modification of a system so that its outputs are approximately

linear functions of its inputs, in order to facilitate analysis of the system. **2.** The mathematical approximation of a nonlinear system, whose departures from linearity are small, by a linear system corresponding to small changes in the variables about their average values. { ˌlin·ē·ər·ə'zā·shən }

linear-logarithmic intermediate-frequency amplifier [ELECTR] Amplifier used to avoid overload or saturation as a protection against jamming in a radar receiver. { 'lin·ē·ər ˌläg·ə 'rith·mik ˌin·tər¦mē·dē·ət ¦frē·kwən·sē 'am·plə ˌfī·ər }

linearly graded junction [ELECTR] A *pn* junction in which the impurity concentration does not change abruptly from donors to acceptors, but varies smoothly across the junction, and is a linear function of position. { 'lin·ē·ər·lē ¦grād·əd 'jəŋk·shən }

linear magnetic amplifier [ELECTR] A magnetic amplifier employing negative feedback to make its output load voltage a linear function of signal current. { 'lin·ē·ər mag¦ned·ik 'am·plə,fī·ər }

linear modulation [COMMUN] Modulation in which the amplitude of the modulation envelope (or the deviation from the resting frequency) is directly proportional to the amplitude of the intelligence signal at all modulation frequencies. { 'lin·ē·ər ˌmäj·ə'lā·shən }

linear motor [ELEC] An electric motor that has in effect been split and unrolled into two flat sheets, so that the motion between rotor and stator is linear rather than rotary. { 'lin·ē·ər 'mōd·ər }

linear network [ELEC] A network in which the parameters of resistance, inductance, and capacitance are constant with respect to current or voltage, and in which the voltage or current of sources is independent of or directly proportional to other voltages and currents, or their derivatives, in the network. Also known as linear circuit. { 'lin·ē·ər 'net,wərk }

linear oscillator *See* harmonic oscillator. { 'lin·ē·ər 'äs·əˌlād·ər }

linear-phase [ELECTR] Pertaining to a filter or other network whose image phase constant is a linear function of frequency. { 'lin·ē·ər ˌfāz }

linear polarization [OPTICS] Polarization of an electromagnetic wave in which the electric vector at a fixed point in space remains pointing in a fixed direction, although varying in magnitude. Also known as plane polarization. { 'lin·ē·ər ˌpō·lə·rə'zā·shən }

linear power amplifier [ELECTR] A power amplifier in which the signal output voltage is directly proportional to the signal input voltage. { 'lin·ē·ər 'paú·ər ˌam·pləˌfī·ər }

linear programming [MATH] The study of maximizing or minimizing a linear function $f(x_1, \ldots, x_n)$ subject to given constraints which are linear inequalities involving the variables x_i. { 'lin·ē·ər 'prōˌgram·iŋ }

linear-quadratic-Gaussian problem [CONT SYS] An optimal-state regulator problem, containing Gaussian noise in both the state and measurement equations, in which the expected value of the quadratic performance index is to be minimized. Abbreviated LQG problem. { 'lin·ē·ər kwə'drad·ik 'gaús·ē·ən ˌpräb·ləm }

linear rectifier [ELECTR] A rectifier, the output current of which contains a wave having a form identical with that of the envelope of an impressed signal wave. { 'lin·ē·ər 'rek·təˌfī·ər }

linear regulator problem [CONT SYS] A type of optimal control problem in which the system to be controlled is described by linear differential equations and the performance index to be minimized is the integral of a quadratic function of the system state and control functions. Also known as optimal regulator problem; regulator problem. { 'lin·ē·ər 'reg·yəˌlād·ər ˌpräb·ləm }

linear repeater [ELECTR] A repeater used in communication satellites to amplify input signals a fixed amount, generally with traveling-wave tubes or solid-state devices operating in their linear region. { 'lin·ē·ər ri'pēd·ər }

linear sweep [ELECTR] A cathode-ray sweep in which the beam moves at constant velocity from one side of the screen to the other, then suddenly snaps back to the starting side. { 'lin·ē·ər ¦swēp }

linear-sweep delay circuit [ELECTR] A widely used form of linear time-delay circuit in which the input signal initiates action by a linear sawtooth generator, such as the bootstrap or Miller integrator, whose output is then compared with a calibrated direct-current reference voltage level. { 'lin·ē·ər ¦swēp di,lā ˌsər·kət }

linear-sweep generator [ELECTR] An electronic circuit that provides a voltage or current that is a linear function of time; the waveform is usually recurrent at uniform periods of time. { 'lin·ē·ər ¦swēp ˌjen·əˌrād·ər }

linear system [CONT SYS] A system in which the outputs are components of a vector which is equal to the value of a linear operator applied to a vector whose components are the inputs. { 'lin·ē·ər 'sis·təm }

linear system analysis [CONT SYS] The study of a system by means of a model consisting of a linear mapping between the system inputs (causes or excitations), applied at the input terminals, and the system outputs (effects or responses), measured or observed at the output terminals. { 'lin·ē·ər ¦sis·təm ə'nal·ə·səs }

linear taper [ELEC] A taper that gives the same change in resistance per degree of rotation over the entire range of a potentiometer. { 'lin·ē·ər 'tā·pər }

linear time base [ELECTR] A time base that makes the electron beam of a cathode-ray tube move at a constant speed along the horizontal time scale. { 'lin·ē·ər 'tīm ˌbās }

linear transducer [ELECTR] A transducer for which the pertinent measures of all the waves concerned are linearly related. { 'lin-ē-ər tranz'dü-sər }

linear unit [ELECTR] An electronic device used in analog computers in which the change in output, due to any change in one of two or more input signals, is proportional to the change in that input and does not depend upon the values of the other inputs. { 'lin-ē-ər 'yü-nət }

linear variable-differential transformer [ELECTR] A transformer in which a diaphragm or other transducer sensing element moves an armature linearly inside the coils of a differential transformer, to change the output voltage by changing the inductances of the coils in equal but opposite amounts. Abbreviated LVDT. { 'lin-ē-ər ˌver-ē-ə-bəl ˌdif-ə¦ren-chəl tranz'fōr-mər }

line balance [ELEC] **1.** Degree of electrical similarity of the two conductors of a transmission line. **2.** Matching impedance, equaling the impedance of the line at all frequencies, that is used to terminate a two-wire line. { 'līn ˌbal-əns }

line-balance converter *See* balun. { 'līn ˌbal-əns kənˌvərd-ər }

line-building-out network *See* impedance-matching network. { 'līn 'bild-iŋ ¦aůt ˌnet,wərk }

line circuit [ELEC] **1.** Equipment associated with each station connected to a dial or manual switchboard. **2.** A circuit to interconnect an individual telephone and a channel terminal. { 'līn ˌsər-kət }

line code [COMPUT SCI] The single instruction required to solve a specific type of problem on a special-purpose computer. { 'līn ˌkōd }

line conditioning [COMMUN] The addition of compensating reactances to a data transmission line to reduce amplitude and phase delays over certain frequency bands. { 'līn kənˌdish-ə-tyniŋ }

line conductor [ELEC] A metal used as a conductor in a power line; the most frequently used conductors are copper and aluminum. { 'līn kən ˌdək-tər }

line-controlled blocking oscillator [ELECTR] A circuit formed by combining a monostable blocking oscillator with an open-circuit transmission line in the regenerative circuit; it is capable of generating pulses with large amounts of power. { 'līn kənˌtrōld ¦bläk-iŋ 'äs-əˌlād-ər }

line cord [ELEC] A two-wire cord terminating in a two-prong plug at one end and connected permanently to a radio receiver or other appliance at the other end; used to make connections to a source of power. Also known as power cord. { 'līn ˌkȯrd }

line-cord resistor [ELEC] An asbestos-enclosed wire-wound resistor incorporated in a line cord along with the two regular wires. { 'līn ˌkȯrd ri ˌzis-tər }

line discipline [COMPUT SCI] The rules that govern exactly how data are transferred between locations in a communications network. { 'līn ˌdis-ə-plən }

line dot matrix [COMPUT SCI] A line printer that uses the dot matrix printing technique. Also known as parallel dot character printer. { 'līn ¦dät 'māˌtriks }

line driver [COMMUN] *See* limited-distance modem. [ELECTR] An integrated circuit that acts as the interface between logic circuits and a two-wire transmission line. { 'līn ˌdrīv-ər }

line drop [ELEC] The voltage drop existing between two points on a power line or transmission line, due to the impedance of the line. { 'līn ˌdräp }

line-drop compensator [ELEC] A device that restores the voltage lost when electricity is transmitted along a wire. { 'līn ¦dräp 'käm-pənˌsād-ər }

line-drop signal [COMMUN] Signal associated with a subscriber line on a manual switchboard. { 'līn ¦dräp ˌsig-nəl }

line editor [COMPUT SCI] A text-editing system that stores a file of discrete lines of text to be printed out on the console (or displayed) and manipulated on a line-by-line basis, so that editing operations are limited and are specified for lines identified by a specific number. { 'līn ˌed-əd-ər }

line equalizer [ELEC] An equalizer containing inductance or capacitance, inserted in a transmission line to modify the frequency response of the line. { 'līn 'ē-kwəˌlīz-ər }

line facility [COMMUN] A transmission line in a communication system, together with amplifiers spaced at regular intervals to offset attenuation in the line. { 'līn fəˌsil-əd-ē }

line fault [ELEC] A defect, such as an open circuit, short circuit, or ground, in an electric line for transmission or distribution of power or of speech, music, or other content. { 'līn ˌfȯlt }

line feed [COMPUT SCI] **1.** Signal that causes a printer to feed the paper up a discrete number of lines. **2.** Rate at which paper is fed through a printer. { 'līn ˌfēd }

line fill [COMMUN] Ratio of the number of connected main telephone stations on a line to the nominal main station capacity of that line. { 'līn ˌfil }

line filter [ELEC] **1.** A filter inserted between a power line and a receiver, transmitter, or other unit of electric equipment to prevent passage of noise signals through the power line in either direction. Also known as power-line filter. **2.** A filter inserted in a transmission line or high-voltage power line for carrier communication purposes. { 'līn ˌfil-tər }

line filter balance [COMMUN] Network designed to maintain phantom group balance when one side of the group is equipped with a carrier system. { 'līn ¦fil-tər ˌbal-əns }

line finder [COMMUN] A switching device that automatically locates an idle telephone or telegraph circuit going to the desired destination. [COMPUT SCI] A device that automatically advances the platen of a line printer or typewriter. { 'līn ˌfīn-dər }

line-finder switch [COMMUN] In telephony, an automatic switch for seizing selector apparatus which provides dial tone to the calling party. { 'līn ˌfīn·dər ˌswich }

line frequency [ELECTR] The number of times per second that the scanning spot sweeps across the screen in a horizontal direction in a video system. Also known as horizontal frequency; horizontal line frequency. { 'līn ˌfrē·kwən·sē }

line-frequency blanking pulse *See* horizontal blanking pulse. { 'līn ˌfrē·kwən·sē 'blaŋk·iŋ ˌpəls }

line interlace *See* interlaced scanning. { 'līn 'in·tərˌlās }

line item [COMPUT SCI] Any data that is considered to be of equal importance to other data in the same file. { 'līn ˌīd·əm }

line level [COMMUN] Signal level in decibels at a particular position on a transmission line. { 'līn ˌlev·əl }

line location [ELEC] The location of power and communications lines when two or more such lines run along the same route; they should either be used jointly, or located with respect to each other so as to avoid unnecessary crossings, conflicts, and inductive exposures. { 'līn lō ˌkā·shən }

line loop [COMMUN] Portion of a telephone circuit that includes a user's telephone set and the pair of wires that connect it with the distributing frame of a central office. { 'līn ˌlüp }

line-loop resistance [ELEC] Metallic resistance of the line wires that extend from an individual telephone set to the dial central office. { 'līn ˌlüp riˌzis·təns }

line loss [ELEC] Total of the various energy losses occurring in a transmission line. { 'līn ˌlȯs }

line microphone [ENG ACOUS] A highly directional microphone consisting of a single straight-line element or an array of small parallel tubes of different lengths, with one end of each abutting a microphone element. Also known as machine-gun microphone. { 'līn ˌmī·krəˌfōn }

line misregistration [COMPUT SCI] In character recognition, the improper appearance of a line of characters, on site in a character reader, with respect to a real or imaginary horizontal line. { 'līn ˌmisˌrej·əˈstrā·shən }

line noise [COMMUN] Noise originating in a transmission line from such causes as poor joints and inductive interference from power lines. { 'līn ˌnȯiz }

line number [COMPUT SCI] A number at the beginning or end of each line of a computer program that specifies its position in a sequence. { 'līn ˌnəm·bər }

line of code [COMPUT SCI] A single statement in a programming language. { 'līn əv 'kōd }

line of electrostatic induction [ELEC] A unit of electric flux equal to the electric flux associated with a charge of 1 statcoulomb. { 'līn əv iˌlek·trə ˌstad·ik inˈdək·shən }

line of sight [ELECTROMAG] The straight line for a transmitting radar antenna in the direction of the beam. { 'līn əv 'sīt }

line pad [ELECTR] Pad inserted between a program amplifier and a transmission line, to isolate the amplifier from impedance variations of the line. { 'līn ˌpad }

line parameters *See* transmission-line parameters. { 'līn pəˌram·əd·ərz }

line printer [COMPUT SCI] A device that prints an entire line in a single operation, without necessarily printing one character at a time. { 'līn ˌprint·ər }

line printing [COMPUT SCI] The printing of an entire line of characters as a unit. { 'līn ˌprint·iŋ }

line pulsing [ELECTR] Method of pulsing a transmitter in which an artificial line is charged over a relatively long period of time and then discharged through the transmitter tubes in a short interval determined by the line characteristic. { 'līn ˌpəls·iŋ }

line radiation [ELECTROMAG] Electromagnetic radiation from a power line caused mainly by corona pulses; gives rise to radio interference. { 'līn ˌrād·ēˌā·shən }

line reflection [COMMUN] Reflection of a signal at the end of a transmission line, at the junction of two or more lines, or at a substation. { 'līn rē ˌflek·shən }

line regulation [ELEC] The maximum change in the output voltage or current of a regulated power supply for a specified change in alternating-current line voltage, such as from 105 to 125 volts. { 'līn ˌreg·yəˈlā·shən }

line relay [ELEC] Relay which is controlled over a subscriber line or trunkline. { 'līn rēˌlā }

line-sequential color television [COMMUN] An analog color television system in which an entire line is one color, with colors changing from line to line in a red, blue, and green sequence. { 'līn siˈkwən·chəl 'kəl·ər 'telˌə·vizh·ən }

line side [ELEC] Terminal connections to an external or outstation source, such as data terminal connections to a communications circuit connecting to another data terminal. { 'līn ˌsīd }

line skew [COMPUT SCI] In character recognition, a form of line misregistration, when the string of characters to be recognized appears in a uniformly slanted condition with respect to a real or imaginary baseline. { 'līn ˌskyü }

line speed [COMMUN] Maximum rate at which signals may be transmitted over a given channel, usually in bauds or bits per second. { 'līn ˌspēd }

lines per minute [COMPUT SCI] A measure of the speed of the printer. Abbreviated LPM. { 'līnz pər 'min·ət }

line-stabilized oscillator [ELECTR] Oscillator in which a section of line is used as a sharply selective circuit element for the purpose of controlling the frequency. { 'līn ˌstā·bəˌlīzd 'äs·əˌlād·ər }

line stretcher [ELECTROMAG] Section of waveguide or rigid coaxial line whose physical length is variable to provide impedance matching. { 'līn ˌstrech·ər }

line switching [COMMUN] A telephone switching system in which a switch attached to a subscriber line connects an originating call to an idle part of

the switching apparatus. [ELECTR] Connecting or disconnecting the line voltage from a piece of electronic equipment. { 'līn ˌswich·iŋ }

line switching concentrator [COMMUN] Switching center used between a group of users and the switching center to reduce the number of trunks and increase efficiency of switching equipment usage (sometimes referred to as statistical multiplexing). { 'līn ˌswich·iŋ 'kän·sənˌtrād·ər }

line synchronizing pulse *See* horizontal synchronizing pulse. { 'līn ˌsiŋ·krəˌnīz·iŋ ˌpəls }

line-to-ground fault [ELEC] A defect in a power or communications line in which faulty insulation allows the conductor to make contact with the earth. { 'līn tə 'graůnd ˌfôlt }

line transducer [ELECTR] A special type of electret transducer consisting essentially of a coaxial cable with polarized dielectric, and with the center conductor and shield serving as electrodes; mechanical excitation resulting in a deformation of the shield at any point along the length of the cable produces an electrical output signal. { 'līn tranzˌdü·sər }

line transformer [ELEC] Transformer connecting a transmission line to terminal equipment; used for isolation, line balance, impedance matching, or additional circuit connections. { 'līn tranz ˌfȯr·mər }

line trap [ELEC] A filter consisting of a series inductance shunted by a tuning capacitor, inserted in series with the power or telephone line for a carrier-current system to minimize the effects of variations in line attenuation and reduce carrier energy loss. { 'līn ˌtrap }

line tuning [ELEC] Adjustment of the frequency of carrier current of a communication system to tune out the reactance of a capacitor with suitable inductance. { 'līn ˌtün·iŋ }

line turnaround [COMMUN] The time required for a half-duplex circuit to reverse the direction of transmission. { 'līn 'tərn·əˌraůnd }

line unit [ELECTR] Electric control device used to send, receive, and control the impulses of a teletypewriter. { 'līn ˌyü·nət }

line-use ratio [COMMUN] As applied to facsimile broadcasting, the ratio of the available line to the total length of scanning line. { 'līn ˌyüs ˌrā·shō }

line voltage [ELEC] The voltage provided by a power line at the point of use. { 'līn ˌvōl·tij }

line-voltage regulator [ELEC] A regulator that counteracts variations in power-line voltage, so as to provide an essentially constant voltage for the connected load. { 'līn ˌvōl·tij 'reg·yəˌlād·ər }

linguistic model [COMPUT SCI] A method of automatic pattern recognition in which a class of patterns is defined as those patterns satisfying a certain set of relations among suitably defined primitive elements. Also known as syntactic model. { liŋ'gwis·tik 'mäd·əl }

link [COMMUN] General term used to indicate the existence of communications facilities between two points. { liŋk }

linkage [COMPUT SCI] In programming, coding that connects two separately coded routines. { 'liŋ·kij }

linkage editor [COMPUT SCI] A service routine that converts the output of assemblers and compilers into a form that can be loaded and executed. { 'liŋ·kij ˌed·əd·ər }

link control message [COMMUN] **1.** Message sent over a link of a network to condition the link to handle transmissions in a prearranged manner. **2.** Message used only between a pair of terminals for the conditioning of the link for digital system control. { 'liŋk kən'trōl ˌmes·ij }

linked list *See* chained list. { 'liŋkt 'list }

link encryption [COMMUN] The application of online crypto-operation to the individual links of relay systems so that all messages passing over the link are encrypted in their entirety. { 'liŋk en'krip·shən }

link field [COMPUT SCI] The first word of a message buffer, used to point to the next buffer on the message queue. { 'liŋk ˌfēld }

link group [COMMUN] A collection of links that employ the same multiplex terminal equipment. { 'liŋk ˌgrüp }

linking loader [COMPUT SCI] A loader which combines the functions of a relocating loader with the ability to combine a number of program segments that have been independently compiled into an executable program. { 'liŋk·iŋ 'lōd·ər }

lin-log amplifier *See* linear-logarithmic intermediate-frequency amplifier. { ˌlin ˌläg 'am·pləˌfī·ər }

Linux [COMPUT SCI] A freely available, open-source operating system kernel capable of running on many different types of computer hardware; first released in 1991. { 'lin·əks }

LIOCS [COMPUT SCI] Set of routines handling buffering, blocking, label checking, and overlap of input/output with processing. Derived from logical input/output control system. { 'līˌäks }

lip-sync [COMMUN] Synchronization of sound and motion picture so that facial movements of speech coincide with the sounds. { 'lip ˌsiŋk }

liquid crystal display [ELECTR] A digital display that consists of two sheets of glass separated by a sealed-in, normally transparent, liquid crystal material; the outer surface of each glass sheet has a transparent conductive coating such as tin oxide or indium oxide, with the viewing-side coating etched into character-forming segments that have leads going to the edges of the display; a voltage applied between front and back electrode coatings disrupts the orderly arrangement of the molecules, darkening the liquid enough to form visible characters even though no light is generated. Abbreviated LCD. { 'lik·wəd 'krist·əl di'splā }

liquid-dielectric capacitor [ELEC] A capacitor in which the plate assemblies are mounted in a tank filled with a suitable oil or liquid dielectric. { 'lik·wəd ˌdī·əˌlek·trik kə'pas·əd·ər }

liquid fuse unit [ELEC] Fuse unit in which the fuse link is immersed in a liquid, or provision is made for drawing the arc into the liquid when the fuse link melts. { 'lik·wəd 'fyüz ˌyü·nət }

liquid-metal fuel cell [ELEC] A fuel cell that uses molten potassium and bismuth as reactants and

a molten salt electrolyte; has very high power output, but a relatively short life. { 'lik·wəd ¦med·əl 'fyül ˌsel }

liquid-metal MHD generator [ELEC] A system for generating electric power in which the kinetic energy of a flowing, molten metal is converted to electric energy by magnetohydrodynamic (MHD) interaction. { 'lik·wəd ¦med·əl ¦em¦äch¦dē 'jen·ə ˌrād·ər }

liquid rheostat [ELECTR] A variable-resistance type of voltage regulator in which the variable-resistance element is liquid, usually water; carbon electrodes are raised or lowered in the liquid to change resistance ratings and control voltage flow. { 'lik·wəd 'rē·əˌstat }

liquid semiconductor [ELECTR] An amorphous material in solid or liquid state that possesses the properties of varying resistance induced by charge carrier injection. { 'lik·wəd 'sem·i·kənˌdək·tər }

LISP [COMPUT SCI] An interpretive language developed for the manipulation of symbolic strings of recursive data; can also be used to manipulate mathematical and arithmetic logic. Derived from list processing language. { lisp }

list [COMPUT SCI] **1.** A last-in, first-out storage organization, usually implemented by software, but sometimes implemented by hardware. **2.** In FORTRAN, a set of data items to be read or written. { list }

list processing [COMPUT SCI] A programming technique in which list structures are used to organize memory. { 'list ¦präˌses·iŋ }

list processing language *See* LISP. { 'list ¦präˌses·iŋ ˌlaŋ·gwij }

listserv [COMPUT SCI] The software (server) used to maintain an electronic mailing list. Also known as list server. { 'listˌsərv }

list server *See* listserv. { 'list ˌsər·vər }

list structure [COMPUT SCI] A set of data items, connected together because each element contains the address of a successor element (and sometimes of a predecessor element). { 'list ˌstrək·chər }

literal operand [COMPUT SCI] An operand, usually occurring in a source language instruction, whose value is specified by a constant which appears in the instruction rather than by an address where a constant is stored. { 'lid·ə·rəl ¦äp·ə¦rand }

lithium battery [ELEC] A solid-state battery with a lithium anode, an iodine-polyvinyl pyridine cathode, and an electrolyte consisting of a layer of lithium iodide; used in cardiac pacemakers. { 'lith·ē·əm 'bad·ə·rē }

lithium cell [ELEC] A primary cell for producing electrical energy by using lithium metal for one electrode immersed in usually an organic electrolyte. { 'lith·ē·əm ˌsel }

lithium-drifted germanium crystal [ELECTR] A high-resolution junction detector, used especially for more penetrating gamma-radiation and higher-energy electrons, produced by drifting lithium ions through a germanium crystal to produce an intrinsic region where impurity-based carrier generation centers are deactivated, sandwiched between a *p* layer and an *n* layer. { 'lith·ē·əm ¦drif·təd jə'mā·nē·əm 'krist·əl }

lithium-sulfur battery [ELEC] A storage battery in which the cells use a molten lithium cathode and a molten sulfur anode separated by a molten salt electrolyte that consists of lithium iodide, potassium iodide, and lithium chloride. { 'lith·ē·əm ¦səl·fər 'bad·ə·rē }

lithography [ELECTR] A technique used for integrated circuit fabrication in which a silicon slice is coated uniformly with a radiation-sensitive film, the resist, and an exposing source (such as light, x-rays, or an electron beam) illuminates selected areas of the surface through an intervening master template for a particular pattern. { jə'thäg·rə·fē }

little LEO system [COMMUN] A system of small satellites in low earth orbit (LEO) that provides messaging, data, and location services but does not have the capability of voice transmission. { ¦lit·əl ¦lē·o ˌsis·təm }

litzendraht wire *See* litz wire. { 'lits·ənˌdrät ˌwīr }

litz wire [ELEC] Wire consisting of a number of separately insulated strands woven together so each strand successively takes up all possible positions in the cross section of the entire conductor, to reduce skin effect and thereby reduce radio-frequency resistance. Derived from litzendraht wire. { 'lits ˌwīr }

live [COMMUN] Being broadcast directly at the time of production, instead of from recorded or filmed program material. { līv }

live chassis [ELECTR] A radio, television, or other chassis that has a direct chassis connection to one side of the alternating-current line. { 'līv 'cha·sē }

live data [COMPUT SCI] Actual data that are employed during the final testing of a computer system, as opposed to test data. { 'līv 'dad·ə }

live system [COMPUT SCI] A computer system on which all testing has been completed so that it is fully operational and ready for production work. { 'līv 'sis·təm }

liveware [COMPUT SCI] The people involved in the operation of a computer system, thought of as a component of the system along with hardware and software. { 'līvˌwer }

LLL circuit *See* low-level logic circuit. { ¦el¦el'el ˌsər·kət }

L network [ELECTR] A network composed of two branches in series, with the free ends connected to one pair of terminals; the junction point and one free end are connected to another pair of terminals. { 'el ˌnetˌwərk }

load [COMPUT SCI] **1.** To place data into an internal register under program control. **2.** To place a program from external storage into central memory under operator (or program) control, particularly when loading the first program into an otherwise empty computer. **3.** An instruction, or operator control button, which causes the computer to initiate the load action. **4.** The amount of work scheduled on a computer system, usually expressed in hours of work. [ELEC] **1.** A device that consumes electric power. **2.** The amount of electric power that

is drawn from a power line, generator, or other power source. **3.** The material to be heated by an induction heater or dielectric heater. Also known as work. [ELECTR] The device that receives the useful signal output of an amplifier, oscillator, or other signal source. { lōd }

load-and-go [COMPUT SCI] An operating technique with no stops between the loading and execution phases of a program; may include assembling or compiling. { ¦lōd ən 'gō }

load-break switch [ELEC] An electric switch in a circuit with several hundred thousand volts, designed to carry a large amount of current without overheating the open position, having enough insulation to isolate the circuit in closed position, and equipped with arc interrupters to interrupt the load current. { 'lōd ¦brāk ˌswich }

load cell [ELEC] A device which measures large pressures by applying the pressure to a piezoelectric crystal and measuring the voltage across the crystal; the cell plus a recording mechanism constitutes a strain gage. { 'lōd ˌsel }

load characteristic [ELECTR] Relation between the instantaneous values of a pair of variables such as an electrode voltage and an electrode current, when all direct electrode supply voltages are maintained constant. Also known as dynamic characteristic. { 'lōd ˌkar·ik·tə'ris·tik }

load circuit [ELECTR] Complete circuit required to transform power from a source such as an electron tube to a load. { 'lōd ˌsər·kət }

load circuit efficiency [ELECTR] Ratio between useful power delivered by the load circuit to the load and the load circuit power input. { 'lōd ¦sər·kət i'fish·ən·sē }

load compensation [CONT SYS] Compensation in which the compensator acts on the output signal after it has generated feedback signals. Also known as load stabilization. { 'lōd ˌkäm·pən'sā·shən }

load curve [ELEC] A graph that plots the power supplied by an electric power system versus time. { 'lōd ˌkərv }

load divider [ELEC] Unit for distributing power to various units. { 'lōd di,vīd·ər }

loaded line [ELEC] Wire line in which loading coils have been inserted at regular intervals to reduce attenuation and phase lag at the frequencies within the band used. { 'lōd·əd līn }

loaded motional impedance *See* motional impedance. { 'lōd·əd ¦mō·shən·əl im'pēd·əns }

loaded Q [ELECTROMAG] The Q factor of a specific mode of resonance of a microwave tube or resonant cavity when there is external coupling to that mode. { 'lōd·əd kyü }

loader [COMPUT SCI] A computer program that takes some other program from an input or storage device and places it in memory at some predetermined address. { 'lōd·ər }

load factor [ELEC] The ratio of average electric load to peak load, usually calculated over a 1-hour period. { 'lōd ˌfak·tər }

load impedance [ELECTR] The complex impedance presented to a transducer by its load. { 'lōd im,pēd·əns }

loading [ELEC] The addition of inductance to a transmission line to improve its transmission characteristics throughout a given frequency band. Also known as electrical loading. [ENG ACOUS] Placing material at the front or rear of a loudspeaker to change its acoustic impedance and thereby alter its radiation. { 'lōd·iŋ }

loading coil [ELECTROMAG] **1.** An iron-core coil connected into a telephone line or cable at regular intervals to lessen the effect of line capacitance and reduce distortion. Also known as Pupin coil; telephone loading coil. **2.** A coil inserted in series with a radio antenna to increase its electrical length and thereby lower the resonant frequency. { 'lōd·iŋ ˌkȯil }

loading device [COMPUT SCI] Equipment from which programs or other data can be transferred or copied into a computer. { 'lōd·iŋ di,vīs }

loading disk [ELECTROMAG] Circular metal piece mounted at the top of a vertical antenna to increase its natural wavelength. { 'lōd·iŋ ˌdisk }

loading program [COMPUT SCI] Program used to load other programs into computer memory. Also known as bootstrap program. { 'lōd·iŋ ˌprō·grəm }

loading routine *See* input routine. { 'lōd·iŋ rü ˌtēn }

load isolator [ELECTROMAG] Waveguide or coaxial device that provides a good energy path from a signal source to a load, but provides a poor energy path for reflections from a mismatched load back to the signal source. { 'lōd ˌī·sə ˌlād·ər }

load leveling [ELEC] A method for reducing the large fluctuations that occur in electricity demand, for example by storing excess electricity during periods of low demand for use during periods of high demand. { 'lōd ˌlev·ə·liŋ }

load line [ELECTR] A straight line drawn across a series of tube or transistor characteristic curves to show how output signal current will change with input signal voltage when a specified load resistance is used. { 'lōd ˌlīn }

load loss [ELEC] The sum of the copper loss of a transformer, due to resistance in the windings, plus the eddy current loss in the winding, plus the stray loss. { 'lōd ˌlȯs }

load module [COMPUT SCI] A program in a form suitable for loading into memory and executing. { 'lōd ˌmä·jül }

load point [COMPUT SCI] Preset point on a magnetic tape from which reading or writing will start. { 'lōd ˌpȯint }

load power [ELEC] Of an energy load, the average rate of flow of energy through the terminals of that load when connected to a specified source. { 'lōd ˌpau·ər }

load regulation [ELEC] The maximum change in the output voltage or current of a regulated power supply for a specified change in load conditions. { 'lōd ˌreg·yə,lā·shən }

load shedding [ELEC] A procedure in which parts of an electric power system are disconnected in an attempt to prevent failure of the entire system due to overloading. { 'lōd ˌshed·iŋ }

load shifting [ELEC] In an electric power system, the transfer of loads from times of peak demand to off-peak time periods. { 'lōd ˌshift·iŋ }

load stabilization *See* load compensation. { 'lōd ˌstā·bə·lə,zā·shən }

lobe [ELECTROMAG] A part of the radiation pattern of a directional antenna representing an area of stronger radio-signal transmission. Also known as radiation lobe. [ENG ACOUS] A portion of the directivity pattern of a transducer representing an area of increased emission or response. { lōb }

lobe-half-power width [ELECTROMAG] In a plane containing the direction of the maximum energy of a lobe, the angle between the two directions in that plane about the maximum in which the radiation intensity is one-half the maximum value of the lobe. { ¦lōb ¦haf ¦paù·ər ˌwidth }

lobe switching *See* beam switching. { 'lōb ˌswich·iŋ }

lobing [ELECTROMAG] Formation of maxima and minima at various angles of the vertical plane antenna pattern by the reflection of energy from the surface surrounding the radar antenna; these reflections reinforce the main beam at some angles and detract from it at other angles, producing fingers of energy. { 'lōb·iŋ }

local action [ELEC] **1.** Internal losses of a battery caused by chemical reactions producing local currents between different parts of a plate. **2.** Quantitatively, the percentage loss per month in the capacity of a battery on open circuit, or the amount of current needed to keep the battery fully charged. { 'lō·kəl 'ak·shən }

local-area network [COMPUT SCI] A communications network connecting various hardware devices together within a building by means of a continuous cable, an in-house voice-data telephone system, or a radio -based system. Abbreviated LAN. { 'lō·kəl¦er·ē·ə 'net,wərk }

local battery [ELEC] Battery that actuates the telegraphic station recording instruments, as distinguished from the battery furnishing current to the line. { 'lō·kəl 'bad·ə·rē }

local-battery telephone set [ELECTR] Telephone set for which the transmitter current is supplied from a battery, or other current supply circuit, individual to the telephone set; the signaling current may be supplied from a local hand generator or from a centralized power source. { 'lō·kəl 'bad·ə·rē 'tel·ə,fōn ˌset }

local cell [ELEC] A galvanic cell resulting from differences in potential between adjacent areas on the surface of a metal immersed in an electrolyte. { 'lō·kəl 'sel }

local central office [COMMUN] A telephone central office, which terminates subscriber lines and makes connections with other central offices, usually equipped to serve 10,000 main telephones of its immediate community. { 'lō·kəl ¦sen·trəl 'òf·əs }

local circuit [COMMUN] Circuit to a main or auxiliary circuit which can be made available at any station or patched from point to point through one or more stations. { 'lō·kəl 'sər·kət }

local control [COMMUN] System or method of radio-transmitter control whereby the control functions are performed directly at the transmitter. { 'lō·kəl kən'trōl }

local controller *See* first-level controller. { 'lō·kəl kən'trōl·ər }

local device [COMPUT SCI] Peripheral equipment that is linked directly to a computer or other supporting equipment, without an intervening communications channel. { 'lō·kəl di'vīs }

local exchange *See* exchange. { 'lō·kəl iks'chānj }

localization [COMPUT SCI] Imposing some physical order upon a set of objects, so that a given object has a greater probability of being in some particular regions of space than in others. { ˌlō·kə·lə'zā·shən }

local line *See* local loop. { 'lō·kəl 'līn }

local loop [COMMUN] A telephone line from the user's location that terminates at the local central office. Also known as local line. { 'lō·kəl 'lüp }

local networking [CONT SYS] The system of communication linking together the components of a single robot. { 'lō·kəl 'net,wərk·iŋ }

local oscillator [ELECTR] The oscillator in a superheterodyne receiver, whose output is mixed with the incoming modulated radio-frequency carrier signal in the mixer to give the frequency conversions needed to produce the intermediate-frequency signal. { 'lō·kəl 'äs·ə,lād·ər }

local-oscillator injection [ELECTR] Adjustment used to vary the magnitude of the local oscillator signal that is coupled into the mixer. { 'lō·kəl 'äs·ə,lād·ər in¦jek·shən }

local-oscillator radiation [ELECTR] Radiation of the fundamental or harmonics of the local oscillator of a superheterodyne receiver. { 'lō·kəl 'äs·ə,lād·ər ˌrād·ē'ā·shən }

local register [COMPUT SCI] One of a relatively small number (usually less than 32) of high-speed storage elements in a computer system which may be directly referred to by the instructions in the programs. Also known as general register. { 'lō·kəl 'rej·ə·stər }

local side [COMMUN] Terminal connections to an internal or in-station source such as data terminal connections to input or output devices. { 'lō·kəl ˌsīd }

local storage [COMPUT SCI] The collection of local registers in a computer system. { 'lō·kəl 'stȯr·ij }

local trunk [COMMUN] Trunk between local and long-distance switchboards, or between local and private branch exchange switchboards. { 'lō·kəl 'trəŋk }

local variable [COMPUT SCI] A variable which can be accessed (used or changed) only in one block of a computer program. { 'lō·kəl 'ver·ē·ə·bəl }

locate mode [COMPUT SCI] A method of communicating with an input/output control system (IOCS), in which the address of the data involved, but not the data themselves, is transferred between the IOCS routine and the program. { 'lō,kāt ˌmōd }

location [COMPUT SCI] Any place in which data may be stored; usually expressed as a number. { lō'kā·shən }

location constant [COMPUT SCI] A number that identifies an instruction in a computer program, written in a higher-level programming language, and used to refer to this instruction at other points in the program. Also known as label constant. { lō'kā·shən ˌkän·stənt }

location counter See instruction counter. { lō'kā·shən ˌkaůnt·ər }

lock [ELECTR] **1.** To fasten onto and automatically follow a target by means of a radar beam; similarly to acquire and maintain attention to the signal from a single source by anticipation of some feature of it. **2.** To control the frequency of an oscillator by means of an applied signal of constant frequency. { läk }

locked-in line [COMMUN] A telephone line that remains established after the caller has hung up. { 'läkt|in ˌlīn }

locked oscillator [ELECTR] A sine-wave oscillator whose frequency can be locked by an external signal to the control frequency divided by an integer. { 'läkt 'äs·əˌlād·ər }

locked-oscillator detector [ELECTR] A frequency-modulation detector in which a local oscillator follows, or is locked to, the input frequency; the phase difference between local oscillator and input signal is proportional to the frequency deviation, and an output voltage is generated proportional to the phase difference. { 'läkt ¦äs·əˌlād·ər di¦tek·tər }

locked-rotor current [ELEC] The current drawn by a stalled electric motor. { 'läkt ¦rōd·ər ˌkə·rənt }

lock-in [ELECTR] Shifting and automatic holding of one or both of the frequencies of two oscillating systems which are coupled together, so that the two frequencies have the ratio of two integral numbers. { 'läk ˌin }

lock-in amplifier [ELECTR] An amplifier that uses some form of automatic synchronization with an external reference signal to detect and measure very weak electromagnetic radiation at radio or optical wavelengths in the presence of very high noise levels. { 'läkˌin 'am·pləˌfī·ər }

locking [ELECTR] Controlling the frequency of an oscillator by means of an applied signal of constant frequency. [ENG] Automatic following of a target by a radar antenna. { 'läk·iŋ }

lock-on [ELECTR] **1.** The procedure wherein a target-seeking system (such as some types of radars) is continuously and automatically following a target in one or more coordinates (for example, range, bearing, elevation), or wherein a signal intercept system isolates signals from a single source. **2.** The instant at which radar begins to track a target automatically. { 'läk ¦ón }

lockout [COMMUN] **1.** In a telephone circuit controlled by two voice-operated devices, the inability of one or both subscribers to get through, because of either excessive local circuit noise or continuous speech from one or both subscribers. Also known as receiver lockout system. **2.** In mobile communications, an arrangement of control circuits whereby only one receiver can feed the system at one time to avoid distortion. Also known as receiver lockout system. [COMPUT SCI] **1.** In computer communications, the inability of a remote terminal to achieve entry to a computer system until project programmer number, processing authority code, and password have been validated against computer-stored lists. **2.** The precautions taken to ensure that two or more programs executing simultaneously in a computer system do not access the same data at the same time, make unauthorized changes in shared data, or otherwise interfere with each other. **3.** Preventing the central processing unit of a computer from accessing storage because input/output operations are taking place. **4.** Preventing input and output operations from taking place simultaneously. { 'läkˌaůt }

lockout circuit [ELECTR] A switching circuit which responds to concurrent inputs from a number of external circuits by responding to one, and only one, of these circuits at any time. Also known as finding circuit; hunting circuit. { 'läk ˌaůt ˌsər·kət }

lock-up relay [ELEC] A relay that locks in its energized position either by permanent magnetic biasing which can be released only by applying a reverse magnetic pulse or by auxiliary contacts that keep its coil energized until the circuit is interrupted. { 'läkˌəp rēˌlā }

lodar [NAV] A direction finder used to determine the direction of arrival of loran signals, free of night effect, by observing the separately distinguishable ground and sky-wave loran signals on a cathode-ray oscilloscope and positioning a loop antenna to obtain a null indication of the component selected to be most suitable. Also known as lorad. { 'lōˌdär }

log [COMMUN] A record of radio and television station operating data. [COMPUT SCI] A record of computer operating runs, including tapes used, control settings, halts, and other pertinent data. { läg }

logarithmic amplifier [ELECTR] An amplifier whose output signal is a logarithmic function of the input signal. { 'läg·əˌrith·mik 'am·pləˌfī·ər }

logarithmic diode [ELECTR] A diode that has an accurate semilogarithmic relationship between current and voltage over wide and forward dynamic ranges. { 'läg·əˌrith·mik 'dīˌōd }

logarithmic fast time constant [ELECTR] Constant false alarm rate scheme which has a logarithmic intermediate-frequency amplifier followed by a fast time constant circuit. { 'läg·ə ˌrith·mik 'fast ¦tīm ˌkän·stənt }

logarithmic multiplier [ELECTR] A multiplier in which each variable is applied to a logarithmic function generator, and the outputs are added together and applied to an exponential function generator, to obtain an output proportional to

the product of two inputs. { 'läg·ə,rith·mik 'məl·tə,plī·ər }

logbook [COMPUT SCI] A bound volume in which operating data of a computer is noted. { 'läg ,bůk }

logic [ELECTR] **1.** The basic principles and applications of truth tables, interconnections of on/off circuit elements, and other factors involved in mathematical computation in a computer. **2.** General term for the various types of gates, flip-flops, and other on/off circuits used to perform problem-solving functions in a digital computer. { 'läj·ik }

logical comparison [COMPUT SCI] The operation of comparing two items in a computer and producing a one output if they are equal or alike, and a zero output if not alike. { 'läj·ə·kəl kəm'par·ə·sən }

logical construction [COMPUT SCI] A simple logical property that determines the type of characters which a particular code represents; for example, the first two bits can tell whether a character is numeric or alphabetic. { 'läj·ə·kəl kən'strək·shən }

logical data independence [COMPUT SCI] A data base structured so that changing the logical structure will not affect its accessibility by the program reading it. { 'läj·ə·kəl ¦dad·ə ,in·də'pen·dəns }

logical data type [COMPUT SCI] A scalar data type in which a data item can have only one of two values: true or false. Also known as Boolean data type. { 'läj·ə·kəl 'dad·ə ,tīp }

logical decision [COMPUT SCI] The ability to select one of many paths, depending upon intermediate programming data. { 'läj·ə·kəl di'sizh·ən }

logical device table [COMPUT SCI] A table that is used to keep track of information pertaining to an input/output operation on a logical unit, and that contains such information as the symbolic name of the logical unit, the logical device type and the name of the file currently attached to it, the logical input/output request currently pending on the device, and a pointer to the buffers currently associated with the device. { 'läj·ə·kəl di¦vīs ,tā·bəl }

logical drive [COMPUT SCI] A data storage unit, such as a subpartition of a hard drive or an array of storage units, recognized and handled according to the logic of the operating system like a single physical drive. { 'läj·i·kəl ¦drīv }

logical expression [COMPUT SCI] Two arithmetic expressions connected by a relational operator indicating whether an expression is greater than, equal to, or less than the other, or connected by a logical variable, logical constant (true or false), or logical operator. { 'läj·ə·kəl ik'spresh·ən }

logical field [COMPUT SCI] A data field whose variables can take on only two values, which are designated yes and no, true and false, or 0 and 1. { 'läj·ə·kəl 'fēld }

logical file [COMPUT SCI] A file as seen by the program accessing it. { 'läj·ə·kəl 'fīl }

logical flow chart [COMPUT SCI] A detailed graphic solution in terms of the logical operations required to solve a problem. { 'läj·ə·kəl 'flō ,chärt }

logical gate *See* switching gate. { 'läj·ə·kəl 'gāt }

logical instruction [COMPUT SCI] A digital computer instruction which forms a logical combination (on a bit-by-bit basis) of its operands and leaves the result in a known location. { 'läj·ə·kəl in'strək·shən }

logical network [COMPUT SCI] **1.** A collection of computers that is presented as a single network to the user, although it may encompass more than one physical network. **2.** A part of a network of computers that is set up to function as a separate network. { 'läj·i·kəl ¦net,wərk }

logical page [COMPUT SCI] A unit of computer storage consisting of a specified number of bytes. { 'läj·ə·kəl 'pāj }

logical record [COMPUT SCI] A group of adjacent logically related data items. { 'läj·ə·kəl 'rek·ərd }

logical security [COMPUT SCI] Mechanisms internal to a computing system that are used to protect against internal misuse of computing time and unauthorized access to data. { 'läj·ə·kəl sə'kyůr·əd·ē }

logical shift [COMPUT SCI] A shift operation that treats the operand as a set of bits, not as a signed numeric value or character representation. { 'läj·ə·kəl 'shift }

logical sum [COMPUT SCI] A computer addition in which the result is 1 when either one or both input variables is 1, and the result is 0 when the input variables are both 0. { 'läj·ə·kəl 'səm }

logical symbol [COMPUT SCI] A graphical symbol used to represent a logic element. { 'läj·ə·kəl 'sim·bəl }

logical unit [COMPUT SCI] An abstraction of an input/output device in the form of an additional name given to the device in a computer program. { 'läj·ə·kəl 'yü·nət }

logic-arithmetic unit *See* arithmetical unit. { 'läj·ik·ə'rith·mə·tik ,yü·nət }

logic bomb [COMPUT SCI] A computer program that destroys data, generally immediately after it has been loaded. { 'läj·ik ,bäm }

logic card [ELECTR] A small fiber chassis on which resistors, capacitors, transistors, magnetic cores, and diodes are mounted and interconnected in such a way as to perform some computer function; computers employing this type of construction may be repaired by removing the faulty card and replacing it with a new card. { 'läj·ik ,kärd }

logic chip [COMPUT SCI] An integrated circuit that performs logic functions. { 'läj·ik ,chip }

logic circuit [COMPUT SCI] A computer circuit that provides the action of a logic function or logic operation. Also known as logic gate. { 'läj·ik ,sər·kət }

logic design [COMPUT SCI] The design of a computer at the level which considers the operation of each functional block and the relationships between the functional blocks. { 'läj·ik di,zīn }

logic diagram [COMPUT SCI] A graphical representation of the logic design or a portion thereof; displays the existence of functional elements and

the paths by which they interact with one another. ['läj·ik ,dī·ə,gram]

logic element [COMPUT SCI] A hardware circuit that performs a simple, predefined transformation on its input and presents the resulting signal as its output. Occasionally known as functor. ['läj·ik ,el·ə·mənt]

logic error [COMPUT SCI] An error in programming that is caused by faulty reasoning, resulting in the program's functioning incorrectly if the instructions containing the error are encountered. ['läj·ik ,er·ər]

logic gate *See* logic circuit. ['läj·ik ,gāt]

logic high [ELECTR] The electronic representation of the binary digit 1 in a digital circuit or device. ['läj·ik 'hī]

logic level [ELECTR] One of the two voltages whose values have been arbitrarily chosen to represent the binary numbers 1 and 0 in a particular data-processing system. ['läj·ik ,lev·əl]

logic low [ELECTR] The electronic representation of the binary digit 0 in a digital circuit or device. ['läj·ik ,lō]

logic operation [COMPUT SCI] A nonarithmetical operation in a computer, such as comparing, selecting, making references, matching, sorting, and merging, where logical yes-or-no quantities are involved. ['läj·ik ,äp·ə'rā·shən]

logic operator [COMPUT SCI] A rule which assigns, to every combination of the values "true" and "false" among one or more independent variables, the value "true" or "false" to a dependent variable. ['läj·ik 'äp·ə,rād·ər]

logic section *See* arithmetical unit. ['läj·ik ,sek·shən]

logic-seeking printer [COMPUT SCI] A line printer that examines each line to be printed so that it can save time by skipping over blank spaces. ['läj·ik ¦sēk·iŋ 'print·ər]

logic swing [ELECTR] The voltage difference between the logic levels used for 1 and 0; magnitude is chosen arbitrarily for a particular system and is usually well under 10 volts. ['läj·ik ,swiŋ]

logic switch [ELECTR] A diode matrix or other switching arrangement that is capable of directing an input signal to one of several outputs. ['läj·ik ,swich]

logic unit [COMPUT SCI] A separate unit which exists in some computer systems to carry out logic (as opposed to arithmetic) operations. ['läj·ik ,yü·nət]

logic word [COMPUT SCI] A machine word which represents an arbitrary set of digitally encoded symbols. ['läj·ik ,wərd]

log-in *See* log-on. ['läg,in]

logo [COMPUT SCI] A high-level, interactive programming language that features a triangular shape called a turtle which can be moved about an electronic display through the use of familiar English-word commands. ['lō·gō]

log-off [COMPUT SCI] The procedure for a user to disconnect from a computer system, including the release of resources that were assigned to the user. ['läg ,óf]

log-on [COMPUT SCI] The procedure for users to identify themselves to a computer system for authorized access to their programs and information. ['läg ,ón]

log-out *See* log-off. ['läg ,aůt]

log-periodic antenna [ELECTROMAG] A broadband antenna which consists of a sheet of metal with two wedge-shaped cutouts, each with teeth cut into its radii along circular arcs; characteristics are repeated at a number of frequencies that are equally spaced on a logarithmic scale. ['läg ,pir·ē¦ad·ik an'ten·ə]

loktal base [ELECTR] A special base for small vacuum tubes, so designed that it locks the tube firmly in a corresponding special eight-pin loktal socket; the tube pins are sealed directly into the glass envelope. ['läk·təl ,bās]

long-base-line system [COMMUN] System in which the distance separating ground stations approximates the distance to the target being tracked. ['lȯŋ 'bās ,līn ,sis·təm]

long card [COMPUT SCI] A full-size printed circuit board that is plugged into an expansion slot in a microcomputer. ['lȯŋ ¦kärd]

long-conductor antenna *See* long-wire antenna. ['lȯŋ kən¦dək·tər an,ten·ə]

long discharge [ELEC] **1.** A capacitor or other electrical charge accumulator which takes a long time to leak off. **2.** A gaseous electrical discharge in which the length of the discharge channel is very long compared with its diameter; lightning discharges are natural examples of long discharges. Also known as long spark. ['lȯŋ 'dis,chärj]

long-distance loop [COMMUN] Line from a subscriber's station directly to a long-distance switchboard. ['lȯŋ ,dis·təns 'lüp]

long-distance xerography [COMMUN] A facsimile system that uses a cathode-ray scanner at the microwave transmitting terminal; at the receiving terminal, a lens projects the received cathode-ray image onto the selenium-coated drum of a xerographic copying machine. ['lȯŋ ,dis·təns zi'räg·rə·fē]

long-haul carrier system [COMMUN] An intercity telephone communication system; it may use a frequency-division multiplexed signal modulating subcarrier or it may use digital technology. ['lȯŋ ,hól 'kar·ē·ər ,sis·təm]

long-haul radio [COMMUN] A microwave radio system capable of transmitting telephone, video, data, and telegraph signals over distances on the order of 4000 miles (6500 kilometers) or more on line-of-sight paths between a series of repeaters that demodulate the signal to an intermediate frequency and then remodulate it. ['lȯŋ ,hól 'rād·ē·ō]

longitudinal circuit [ELEC] Circuit formed by one telephone wire (or by two or more telephone wires in parallel) with return through the earth or through any other conductors except those which are taken with the original wire or wires to form a metallic telephone circuit. [,län·jə'tüd·ən·əl 'sər·kət]

longitudinal current [ELEC] Current which flows in the same direction in the two wires of a parallel

pair using the earth or other conductors for a return path. { ˌlän·jəˈtüd·ən·əl ˈkə·rənt }

longitudinal-mode delay line [ELECTR] A magnetostrictive delay in which signals are propagated by means of longitudinal vibrations in the magnetostrictive material. { ˌlän·jəˈtüd·ən·əl ˈmōd diˈlā ˌlīn }

longitudinal parity [COMMUN] Parity associated with bits recorded on one track in a data block, to indicate whether the number of recorded bits in the block is even or odd. { ˌlän·jəˈtüd·ən·əl ˈpar·əd·ē }

longitudinal parity check [COMMUN] The count for even or odd parity of all the bits in a message as a precaution against transmission error. Also known as horizontal parity check. { ˌlän·jəˈtüd·ən·əl ˈpar·əd·ē ˌchek }

longitudinal redundancy check [COMMUN] A method of checking for errors, in which data are arranged in blocks according to some rule, and the correctness of each character in the block is determined according to the rule. Abbreviated LRC. { ˌlän·jəˈtüd·ən·əl riˈdən·dən·sē ˌchek }

Longley-Rice [COMMUN] A model used to predict the long-term median transmission loss over irregular terrain that is applied to predicting signal strength at one or more locations. Longley-Rice computations are employed both by the FCC allocations rules for FM stations to predict signal strength contours and by propagation modeling software to predict signal strengths in a two-dimensional grid on a map. The FCC implementation of Longley-Rice computations employs average terrain computations and an assumed 30-ft receive antenna height. { ˈlȯŋ·lē ˈrīs }

long-line current [ELEC] A current that flows through the earth from an anodic to a cathodic area and returns along an underground pipe or other metal structure, often over a considerable distance and as the result of concentration cell action. { ˈlȯŋ ˌlīn ˌkə·rənt }

long-line effect [ELECTR] An effect occurring when an oscillator is coupled to a transmission line with a bad mismatch; two or more frequencies may then be equally suitable for oscillation, and the oscillator jumps from one of these frequencies to another as its load changes. { ˈlȯŋ ˌlīn iˌfekt }

long-lines engineering [COMMUN] Engineering performed to develop, modernize, or expand long-haul, point-to-point communications facilities using radio, microwave, or wire circuits. { ˈlȯŋ ˌlīnz ˈen·jəˈnir·iŋ }

long-persistence screen [ELECTR] A fluorescent screen containing phosphorescent compounds that increase the decay time, so a pattern may be seen for several seconds after it is produced by the electron beam. { ˈlȯŋ pərˌsis·təns ˈskrēn }

long spark *See* long discharge. { ˈlȯŋ ˈspärk }

long-tail pair [ELECTR] A two-tube or transistor circuit that has a common resistor (tail resistor) which gives strong negative feedback. { ˈlȯŋ ˌtāl ˌper }

long-term predictor [COMMUN] An electric filter that removes redundancies in a signal associated with long-term correlations so that information can be transmitted more efficiently. { ˈlȯŋ ˌtərm prəˈdik·tər }

long-term repeatability [CONT SYS] The closeness of agreement of positional movements of a robotic system repeated under identical conditions over long periods of time. { ˈlȯŋ ˌtərm riˌpēd·əˈbil·əd·ē }

long wave [COMMUN] An electromagnetic wave having a wavelength longer than the longest broadcast-band wavelength of about 545 meters, corresponding to frequencies below about 550 kilohertz. { ˈlȯŋ ˈwāv }

long-wave radio [COMMUN] A radio which can receive frequencies below the lowest broadcast frequency of 550 kilohertz. { ˈlȯŋ ˌwāv ˈrād·ēˌō }

long-wire antenna [ELECTROMAG] An antenna whose length is a number of times greater than its operating wavelength, so as to give a directional radiation pattern. Also known as long-conductor antenna. { ˈlȯŋ ˌwīr anˈten·ə }

lookahead [COMPUT SCI] A procedure in which a processor is preparing one instruction in a computer program while executing its predecessor. { ˈlůkˌəˌhed }

lookahead tree *See* game tree. { ˈlůkˌəˌhed ˌtrē }

look-through [ELECTR] **1.** When jamming, a technique whereby the jamming emission is interrupted irregularly for extremely short periods to allow monitoring of the victim signal during jamming operations. **2.** When being jammed, the technique of observing or monitoring a desired signal during interruptions in the jamming signal. { ˈlůkˌthrü }

look time *See* dwell time. { ˈlůk ˌtīm }

look-up [COMPUT SCI] An operation or process in which a table of stored values is scanned (or searched) until a value equal to (or sometimes, greater than) a specified value is found. { ˈlůkˌəp }

look-up table [COMPUT SCI] A stored matrix of data for reference purpose. { ˈlůk ˌəp ˌtā·bəl }

loop [COMPUT SCI] A sequence of computer instructions which are executed repeatedly, but usually with address modifications changing the operands of each iteration, until a terminating condition is satisfied. [ELEC] **1.** A closed path or circuit over which a signal can circulate, as in a feedback control system. **2.** Commercially, the portion of a connection from central office to subscriber in a telephone system. [ELECTROMAG] *See* coupling loop; loop antenna. { lüp }

loop antenna [ELECTROMAG] A directional-type antenna consisting of one or more complete turns of a conductor, usually tuned to resonance by a variable capacitor connected to the terminals of the loop. Also known as loop. { ˈlüp anˌten·ə }

loopback check *See* echo check. { ˈlüpˌbakˌchek }

loopback switch [ELECTR] A switch at the end of a telephone line that is used to test the line and, when closed, reflects received signals to the sender. { ˈlüpˌbak ˌswich }

loop body [COMPUT SCI] The set of statements to be performed iteratively with the range of a loop. { ˈlüp ˌbäd·ē }

loop check *See* echo check. { 'lüp ,chek }

loop checking [COMMUN] Sending signals from the central office to test the integrity of local loops. { 'lüp ,chek-iŋ }

loop circuit [COMMUN] Common communications circuit shared by more than two parties; when applied to a teletypewriter operation, all machines print all data entered on the loop. { 'lüp ,sər-kət }

loop coupling [ELECTROMAG] A method of transferring energy between a waveguide and an external circuit, by inserting a conducting loop into the waveguide, oriented so that electric lines of flux pass through it. { 'lüp ,kəp-liŋ }

loop dialing [COMMUN] Return-path method of dialing in which the dial pulses are sent out over one side of the interconnecting line or trunk and are returned over the other side; limited to short-haul traffic. { 'lüp ,dī-liŋ }

loop filter [ELECTR] A low-pass filter, which may be a simple RC filter or may include an amplifier, and which passes the original modulating frequencies but removes the carrier-frequency components and harmonics from a frequency-modulated signal in a locked-oscillator detector. { 'lüp ,fil-tər }

loop flow *See* parallel flow. { 'lüp ,flō }

loop gain [CONT SYS] The ratio of the magnitude of the primary feedback signal in a feedback control system to the magnitude of the actuating signal. [ELECTR] Total usable power gain of a carrier terminal or two-wire repeater; maximum usable gain is determined by, and may not exceed, the losses in the closed path. { 'lüp ,gān }

loop head [COMPUT SCI] The first instruction of a loop, which contains the mode of execution, induction variable, and indexing parameters. { 'lüp ,hed }

loop-mile [ELEC] Length of wire in a mile of two-wire line. { 'lüp ¦mīl }

loop network *See* ring network. { 'lüp 'net,wərk }

loop pulsing [COMMUN] Regular, momentary interruptions of the direct-current path at the sending end of a transmission line. Also known as dial pulsing. { 'lüp ,pəls-iŋ }

loop ratio *See* loop transfer function. { 'lüp ,rā-shō }

loopstick antenna *See* ferrite-rod antenna. { 'lüp ,stik an,ten-ə }

loop stop [COMPUT SCI] A small closed loop that is entered to stop the progress of a computer program, usually when some condition occurs that requires intervention by the operator or that should be brought to the operator's attention. Also known as stop loop. { 'lüp ,stäp }

loop test [ELEC] A telephone or telegraph line test that is made by connecting a faulty line to good lines in such a way as to form a loop in which measurements can be made to determine the position of the fault. { 'lüp ,test }

loop transfer function [CONT SYS] For a feedback control system, the ratio of the Laplace transform of the primary feedback signal to the Laplace transform of the actuating signal. Also known as loop ratio. { 'lüp 'tranz-fər ,fəŋk-shən }

loop transmittance [CONT SYS] **1.** The transmittance between the source and sink created by the splitting of a specified node in a signal flow graph. **2.** The transmittance between the source and sink created by the splitting of a node which has been inserted in a specified branch of a signal flow graph in such a way that the transmittance of the branch is unchanged. { 'lüp tranz,mit-əns }

loose coupling [ELEC] Coupling of a degree less than the critical coupling. { 'lüs 'kəp-liŋ }

loose list [COMPUT SCI] A list, some of whose cells are empty and thus do not contain records of the file. Also known as thin list. { 'lüs 'list }

loosely coupled computer [COMPUT SCI] A computer that can function by itself and can also be connected to other computers to exchange data when necessary. { 'lüs-lē ¦kəp-əld kəm'pyüd-ər }

lorad *See* lodar. { 'lòr,ad }

loran [NAV] The designation of a family of radio navigation systems by which hyperbolic lines of position are determined by measuring the difference in the times of reception of synchronized pulse signals from two or more fixed transmitters. Derived from long-range navigation. { 'lòr,an }

Lorentz gas [ELECTR] A model of completely ionized gas in which ions are assumed to be stationary and interactions between electrons are neglected. { 'lòr,ens ,gas }

Lorentz local field [ELEC] In a theory of electric polarization, the average electric field due to the polarization at a molecular site that is calculated under the assumption that the field due to polarization by molecules inside a small sphere centered at the site may be neglected. Also known as Mossotti field. { 'lòr,ens ¦lō-kəl 'fēld }

loss [COMMUN] *See* transmission loss. [ENG] Power that is dissipated in a device or system without doing useful work. Also known as internal loss. { lòs }

loss current [ELEC] The current which passes through a capacitor as a result of the conductivity of the dielectric and results in power loss in the capacitor. [ELECTROMAG] The component of the current across an inductor which is in phase with the voltage (in phasor notation) and is associated with power losses in the inductor. { 'lòs ,kə-rənt }

losser circuit [ELEC] Resonant circuit having sufficient high-frequency resistance to prevent sustained oscillation at the resonant frequency. { 'lòs-ər ,sər-kət }

loss evaluation [ELEC] A method of achieving an economic balance between buyer and seller in adding material to a transformer design to get lower losses, in which one calculates a value in dollars per kilowatt for load loss and for no-load loss. { 'lòs i,val-yə'wā-shən }

Lossev effect *See* injection electroluminescence. { ,lò,sef i,fekt }

loss factor [ELEC] The power factor of a material multiplied by its dielectric constant; determines the amount of heat generated in a material. { 'lòs ,fak-tər }

lossless data compression [COMMUN] Data compression in which the recovered data are

assured to be identical to the source. { ¦lós,les 'dad·ə kəm,presh·ən }

lossless junction [ELECTROMAG] A waveguide junction in which all the power incident on the junction is reflected from it. { 'lós·ləs ,jəŋk·shən }

loss modulation *See* absorption modulation. { 'lós ,mäj·ə,lā·shən }

loss of information *See* walk down. { 'lós əv ,in·fər ,mā·shən }

lossy attenuator [ELECTROMAG] In waveguide technique, a length of waveguide deliberately introducing a transmission loss by the use of some dissipative material. { 'lós·ē ə'ten·yə,wād·ər }

lossy data compression [COMMUN] Data compression in which controlled degradation of the data is allowed. { ¦lós·ē 'dad·ə kəm,presh·ən }

lossy line [ELEC] **1.** Cable used in test measurements which has a large attenuation per unit length. **2.** Transmission line designed to have a high degree of attenuation. { 'lós·ē 'līn }

lost cluster [COMPUT SCI] Disk records that are not associated with a file name in a disk directory. { 'lóst 'kləs·tər }

loudness analyzer [ELECTR] An instrument that produces a cathode-ray display which shows the loudness of airborne sounds at a number of subdivisions of part or all of the audio spectrum. { 'laud·nəs ,an·ə,līz·ər }

loudness control [ENG ACOUS] A combination volume and tone control that boosts bass frequencies when the control is set for low volume, to compensate automatically for the reduced response of the ear to low frequencies at low volume levels. Also known as compensated volume control. { 'laud·nəs kən,trōl }

loudspeaker [ENG ACOUS] A device that converts electrical signal energy into acoustical energy, which it radiates into a bounded space, such as a room, or into outdoor space. Also known as speaker. { 'laud,spēk·ər }

loudspeaker dividing network *See* crossover network. { 'laud,spēk·ər di'vīd·iŋ ,net,wərk }

loudspeaker voice coil *See* voice coil. { 'laud ,spēk·ər 'vòis ,kòil }

low core [COMPUT SCI] The locations with the lower addresses in a computer's main storage, usually used to store control values needed to run the system and other critical information and instructions. { 'lō ,kór }

low-definition television [COMMUN] Television that involves less than about 200 scanning lines per complete image. { 'lō ,def·ə,nish·ən 'tel·ə ,vizh·ən }

lower half-power frequency [ELECTR] The frequency on an amplifier response curve which is smaller than the frequency for peak response and at which the output voltage is $1/\sqrt{2}$ of its midband or other reference value. { 'lō·ər 'haf ,paù·ər 'frē·kwən·sē }

lower sideband [COMMUN] The sideband containing all frequencies below the carrier-frequency value that are produced by an amplitude-modulation process. { 'lō·ər 'sīd,band }

lower-sideband upconverter [ELECTR] Parametric amplifier in which the frequency, power, impedance, and gain considerations are the same as for the nondegenerate amplifier; here, however, the output is taken at the difference frequency, or the lower sideband, rather than the signal-input frequency. { 'lō·ər ¦sīd,band 'əp·kən,vərd·ər }

lowest required radiating power [COMMUN] The smallest power output of an antenna which will suffice to maintain a specified grade of broadcast service. Abbreviated LRRP. { 'lō·əst ri¦kwīrd 'rād·ē,ād·iŋ ,paù·ər }

lowest useful high frequency [COMMUN] The lowest high frequency that is effective at a specified time for ionospheric propagation of radio waves between two specified points. Abbreviated LUHF. { 'lō·əst ¦yüs·fəl 'hī ,frē·kwən·sē }

low-frequency [COMMUN] A Federal Communications Commission designation for the band from 30 to 300 kilohertz in the radio spectrum. Abbreviated LF. { 'lō ,frē·kwən·sē }

low-frequency antenna [ELECTROMAG] An antenna designed to transmit or receive radiation at frequencies of less than about 300 kilohertz. { 'lō ,frē·kwən·sē an'ten·ə }

low-frequency compensation [ELECTR] Compensation that serves to extend the frequency range of a broad-band amplifier to lower frequencies. { 'lō ,frē·kwən·sē ,käm·pə'sā·shən }

low-frequency current [ELEC] An alternating current having a frequency of less than about 300 kilohertz. { 'lō ,frē·kwən·sē 'kə·rənt }

low-frequency cutoff [ELECTR] A frequency below which the gain of a system or device decreases rapidly. { 'lō ,frē·kwən·sē 'kə,dóf }

low-frequency gain [ELECTR] The gain of the voltage amplifier at frequencies less than those frequencies at which this gain is close to its maximum value. { 'lō ,frē·kwən·sē 'gān }

low-frequency impedance corrector [ELEC] Electric network designed to be connected to a basic network, or to a basic network and a building-out network, so that the combination will simulate, at low frequencies, the sending-end impedance, including dissipation, of a line. { 'lō ,frē·kwən·sē im'pēd·əns kə,rek·tər }

low-frequency loran [NAV] A modification of standard loran, which operates in the low-frequency range of approximately 100 to 200 kilohertz to increase range over land and during daytime, and which matches cycles rather than envelopes of pulses to obtain a more accurate fix. Abbreviated LF loran. Also known as cycle-matching loran. { 'lō ,frē·kwən·sē 'lòr,an }

low-frequency padder [ELECTR] In a superheterodyne receiver, a small adjustable capacitor connected in series with the oscillator tuning coil and adjusted during alignment to obtain correct calibration of the circuit at the

low-frequency end of the tuning range. { 'lō ,frē·kwən·sē 'pad·ər }

low-frequency propagation [ELECTROMAG] Propagation of radio waves at frequencies between 30 and 300 kilohertz. { 'lō ,frē·kwən·sē ,präp·ə'gā·shən }

low-frequency transconductance [ELECTR] The change in the plate current of a vacuum tube divided by the change in the control-grid voltage that produces it, at frequencies small enough for these two quantities to be considered in phase. { 'lō ,frē·kwən·sē ,tranz·kən'dək·təns }

low-frequency tube [ELECTR] An electron tube operated at frequencies small enough so that the transit time of an electron between electrodes is much smaller than the period of oscillation of the voltage. { 'lō ,frē·kwən·sē 'tüb }

low-impedance measurement [ELECTR] The measurement of an impedance which is small enough to necessitate use of indirect methods. { 'lō im,pēd·əns 'mezh·ər·mənt }

low-impedance switching tube [ELECTR] A gas tube which has a static impedance on the order of 10,000 ohms, but zero or negative dynamic impedance, and therefore can be used as a relay and transmits information with negligible loss as well. { 'lō im,pēd·əns 'swich·iŋ ,tüb }

low level [ELECTR] The less positive of the two logic levels or states in a digital logic system. { 'lō ,lev·əl }

low-level language [COMPUT SCI] A computer language consisting of mnemonics that directly correspond to machine language instructions; for example, an assembler that converts the interpreted code of a higher-level language to machine language. { 'lō ,lev·əl 'laŋ·gwij }

low-level logic circuit [ELECTR] A modification of a diode-transistor logic circuit in which a resistor and capacitor in parallel are replaced by a diode, with the result that a relatively small voltage swing is required at the base of the transistor to switch it on or off. Abbreviated LLL circuit. { 'lō ,lev·əl 'läj·ik ,sər·kət }

low-level modulation [ELECTR] Modulation produced at a point in a system where the power level is low compared with the power level at the output of the system. { 'lō ,lev·əl ,mäj·ə'lā·shən }

low-loss [ELEC] Having a small dissipation of electric or electromagnetic power. { 'lō ¦lòs }

low-noise amplifier [ELECTR] An amplifier having very low background noise when the desired signal is weak or absent; field-effect transistors are used in audio preamplifiers for this purpose. { 'lō ,nóiz 'am·plə,fī·ər }

low-noise preamplifier [ELECTR] A low-noise amplifier placed in a system prior to the main amplifier, sometimes close to the source, used to establish a satisfactory noise figure at an early point in the system. { 'lō ,nóiz prē'am·plə,fī·ər }

low-order [COMPUT SCI] Pertaining to the digit which contributes the smallest amount to the value of a numeral, or to its position, or to the rightmost position of a word. { 'lō ,ór·dər }

low-pass band-pass transformation *See* frequency transformation. { 'lō ,pas 'band ,pas ,tranz·fər,mā·shən }

low-pass filter [ELEC] A filter that transmits alternating currents below a given cutoff frequency and substantially attenuates all other currents. { 'lō ,pas 'fil·tər }

low-power television station [COMMUN] A television broadcasting facility limited in transmitter output so as to provide reception in only a local area, with a typical service area radius of 3–16 miles (5–26 kilometers). Abbreviated LPTV station. { 'lō ¦paù·ər 'tel·ə,vish·ən ,stā·shən }

low-Q filter [ELECTR] A filter in which the energy dissipated in each cycle is a fairly large fraction of the energy stored in the filter. { 'lō ¦kyü 'fil·tər }

low-reactance grounding [ELEC] Use of grounding connections with a moderate amount of inductance to effect a moderate reduction in the short-circuit current created by a line-to-ground fault. { 'lō rē¦ak·təns 'graùnd·iŋ }

low side [COMPUT SCI] The part of a controller or other remote device that communicates with terminals or other remote devices, rather than with the host computer. { 'lō ,sīd }

low-technology robot [CONT SYS] The simplest type of robot, with only two or three degrees of freedom, and only the end points of motion specified, using fixed and adjustable stops. { 'lō tek¦näl·ə·jē 'rō,bät }

low-tier system [COMMUN] A wireless telephone system that provides high quality and low-delay voice and data capabilities but has small cells. { ,lō 'tēr ,sis·təm }

low voltage [ELEC] **1.** Voltage which is small enough to be regarded as safe for indoor use, usually 120 volts in the United States. **2.** Voltage which is less than that needed for normal operation; a result of low voltage may be burnout of electric motors due to loss of electromotive force. { 'lō 'vōl·tij }

low-voltage relay [COMMUN] A relay that responds to the drop in voltage (increase in current) when a telephone line becomes active; used to activate interception and eavesdropping equipment. { 'lō ¦vōl·tij 'rē,lā }

L pad [ENG ACOUS] A volume control having essentially the same impedance at all settings. { 'el ,pad }

LPM *See* lines per minute.

LPTV station *See* low-power television station. { ¦el¦pē¦tē'vē ,stā·shən }

LQG problem *See* linear-quadratic-Gaussian problem. { ¦el¦kyü¦jē ,präb·ləm }

LRC *See* longitudinal redundancy check.

LRRP *See* lowest required radiating power.

LSA diode [ELECTR] A microwave diode in which a space charge is developed in the semiconductor by the applied electric field and is dissipated during each cycle before it builds up appreciably, thereby limiting transit time and increasing the maximum frequency of oscillation. Derived from limited space-charge accumulation diode. { ¦el ¦es¦ā 'dī,ōd }

LSA mode *See* limited space-charge accumulation mode. { ¦el¦es'ā ,mōd }

LSB *See* least significant bit.

L-scan *See* L-display. { 'el ,skan }

L-scope *See* L-display. { 'el ,skōp }

LSI circuit *See* large-scale integrated circuit. { ¦el ¦es'ī ,sər·kət }

Luenberger observer [CONT SYS] A compensator driven by both the inputs and measurable outputs of a control system. { 'lün,bərg·ər əb'zər·vər }

LUHF *See* lowest useful high frequency.

Lukasiewicz notation *See* Polish notation. { lü ,kä·shē'ā,vits nō,tā·shən }

luminaire [ELEC] An electric lighting fixture, wall bracket, portable lamp, or other complete lighting unit designed to contain one or more electric lighting sources and associated reflectors, refractors, housing, and such support for those items as necessary. { ¦lü·mə¦ner }

luminance carrier *See* picture carrier. { 'lü·mə·nəns ,kar·ē·ər }

luminance channel [COMMUN] A path intended primarily for the luminance signal in an analog color television system. { 'lü·mə·nəns ,chan·əl }

luminance primary [COMMUN] One of the three transmission primaries whose amount determines the luminance of a color in a color video system. { 'lü·mə·nəns 'prī,mer·ē }

luminance signal [COMMUN] The color video signal that is intended to have exclusive control of the luminance of the picture. Also known as Y signal. { 'lü·mə·nəns ,sig·nəl }

luminescent cell *See* electroluminescent panel. { ,lü·mə'nes·ənt 'sel }

luminescent screen [ELECTR] The screen in a cathode-ray tube, which becomes luminous when bombarded by an electron beam and maintains its luminosity for an appreciable time. { ,lü·mə'nes·ənt 'skrēn }

luminous sensitivity [ELECTR] For a phototube, the quotient of the anode current by the incident luminous flux. { 'lü·mə·nəs ,sen·sə'tiv·əd·ē }

lumped constant [ELEC] A single constant that is electrically equivalent to the total of that type of distributed constant existing in a coil or circuit. Also known as lumped parameter. { 'ləmpt 'kän·stənt }

lumped-constant network [ELEC] An analytical tool in which distributed constants (inductance, capacitance, and resistance) are represented as hypothetical components. { 'ləmpt ¦kän·stənt 'net,wərk }

lumped discontinuity [ELECTROMAG] An analytical tool in the study of microwave circuits in which the effective values of inductance, capacitance, and resistance representing a discontinuity in a waveguide are shown as discrete components of equivalent value. { 'ləmpt ,dis ,känt·ən'ü·əd·ē }

lumped element [ELECTROMAG] A section of a transmission line designed so that electric or magnetic energy is concentrated in it at specified frequencies, and inductance or capacitance may therefore be regarded as concentrated in it, rather than distributed over the length of the line. { 'ləmpt 'el·ə·mənt }

lumped impedance [ELECTROMAG] An impedance concentrated in a single component rather than distributed throughout the length of a transmission line. { 'ləmpt im'pēd·əns }

lumped parameter *See* lumped constant. { 'ləmpt pə'ram·əd·ər }

Luneberg lens [ELECTROMAG] A type of antenna consisting of a dielectric sphere whose index of refraction varies with distance from the center of the sphere so that a beam of parallel rays falling on the lens is focused at a point on the lens surface diametrically opposite from the direction of incidence, and, conversely, energy emanating from a point on the surface is focused into a plane wave. Accurately spelled Luneburg lens. { 'lü·nə,bərg ,lenz }

Luneburg lens *See* Luneberg lens. { 'lü·nə,bərg ,lenz }

Luxemburg effect [COMMUN] Cross modulation between two radio signals during their passage through the ionosphere, due to the nonlinearity of the propagation characteristics of free charges in space. { 'lük·səm,bərg i,fekt }

l value *See* left value. { 'el ,val·yü }

LVDT *See* linear variable-differential transformer.

Lyapunov function [MATH] A function of a vector and of time which is positive-definite and has a negative-definite derivative with respect to time for nonzero vectors, is identically zero for the zero vector, and approaches infinity as the norm of the vector approaches infinity; used in determining the stability of control systems. Also spelled Liapunov function. { lē'ap·ə,nóf ,fəŋk·shən }

Lyapunov stability criterion [CONT SYS] A method of determining the stability of systems (usually nonlinear) by examining the sign-definitive properties of an associated Lyapunov function. { lē'ap·ə,nóf stə'bil·əd·ē krī,tir·ē·ən }

M

M *See* megabyte.
mA *See* milliampere.
MAC *See* message authentication code.
machine [COMPUT SCI] **1.** A mechanical, electric, or electronic device, such as a computer, tabulator, sorter, or collator. **2.** A simplified, abstract model of an internally programmed computer, such as a Turing machine. { mə'shēn }
machine address [COMPUT SCI] The actual and unique internal designation of the location at which an instruction or datum is to be stored or from which it is to be retrieved. { mə'shēn ə'dres }
machine available time [COMPUT SCI] The time during which a computer has its power turned on, is not undergoing maintenance, and is thought to be operating properly. { mə'shēn ə'vāl·ə·bəl ˌtīm }
machine check [COMPUT SCI] A check that tests whether the parts of equipment are functioning properly. Also known as hardware check. { mə'shēn ˌchek }
machine-check indicator [COMPUT SCI] A protective device which turns on when certain conditions arise within the computer; the computer can be programmed to stop or to run a separate correction routine or to ignore the condition. { mə'shēn ˌchek ˌin·dəˌkād·ər }
machine code [COMPUT SCI] **1.** A computer representation of a character, digit, or action command in internal form. **2.** A computer instruction in internal format, or that part of the instruction which identifies the action to be performed. **3.** The set of all instruction types that a particular computer can execute. { mə'shēn ˌkōd }
machine conditions [COMPUT SCI] A component of a task descriptor that specifies the contents of all programmable registers in the processor, such as arithmetic and index registers. { mə'shēn kən'dish·ənz }
machine cycle [COMPUT SCI] **1.** The shortest period of time at the end of which a series of events in the operation of a computer is repeated. **2.** The series of events itself. { mə'shēn ˌsī·kəl }
machine-dependent [COMPUT SCI] Referring to programming languages, programs, systems, and procedures that can be used only on a particular computer or on a line of computers manufactured by a single company. { mə'shēn di¦pen·dənt }
machine error [COMPUT SCI] A deviation from correctness in computer-processed data, caused by equipment failure. { mə'shēn ˌer·ər }
machine-gun microphone *See* line microphone. { mə'shēn ˌgən 'mī·krəˌfōn }
machine-independent [COMPUT SCI] Referring to programs and procedures which function in essentially the same manner regardless of the machine on which they are carried out. { mə'shēn ˌin·də'pen·dənt }
machine instruction [COMPUT SCI] A set of digits, binary bits, or characters that a computer can recognize and act upon, and that, when interpreted or decoded, indicates the action to be performed and which operand is to be involved in the action. { mə'shēn inˌstrək·shən }
machine instruction statement [COMPUT SCI] A statement consisting usually of a tag, an operating code, and one or more addresses. { mə'shēn inˌstrək·shən ˌstāt·mənt }
machine interruption [COMPUT SCI] A halt in computer operations followed by the beginning of a diagnosis procedure, as a result of an error detection. { mə'shēn ˌint·ə'rəp·shən }
machine language [COMPUT SCI] The set of instructions available to a particular digital computer, and by extension the format of a computer program in its final form, capable of being executed by a computer. { mə'shēn ˌlaŋ·gwij }
machine language code [COMPUT SCI] A set of instructions appearing as combinations of binary digits. { mə'shēn ˌlaŋ·gwij 'kōd }
machine learning [COMPUT SCI] The process or technique by which a device modifies its own behavior as the result of its past experience and performance. { mə'shēn ˌlərn·iŋ }
machine logic [COMPUT SCI] The structure of a computer, the operation it performs, and the type and form of data used internally. { mə'shēn ˌläj·ik }
machine operator [COMPUT SCI] The person who manipulates the computer controls, brings up and closes down the computer, and can override a number of computer decisions. { mə'shēn ˌäp·əˌrād·ər }
machine-oriented language *See* computer-oriented language. { mə'shēn ˌȯr·ē¦en·təd 'laŋ·gwij }
machine-oriented programming system [COMPUT SCI] A system written in assembly language (or

macro code) directly oriented toward the computer's internal language. { mə'shēn ¦ōr·ē,ent·əd 'prō,gram·iŋ ,sis·təm }

machine processible form |COMPUT SCI| Any input medium such as a punch card, paper tape, or magnetic tape. { mə'shēn ¦präs,es·ə·bəl 'fȯrm }

machine-readable *See* machine-sensible. { mə'shēn 'rēd·ə·bəl }

machine-recognizable *See* machine-sensible. { mə'shēn ,rek·ig'niz·ə·bəl }

machine ringing |COMMUN| In a telephone system, ringing which is started either mechanically or by an operator, after which it continues automatically until the call is answered or abandoned. { mə'shēn ,riŋ·iŋ }

machine run *See* run. { mə'shēn ¦rən }

machine script |COMPUT SCI| Any data written in a form that can immediately be used by a computer. { mə'shēn ,skript }

machine-sensible |COMPUT SCI| Capable of being read or sensed by a device, usually by one designed and built specifically for this task. Also known as machinable; machine-readable; machine-recognizable; mechanized. { mə'shēn ¦sen·sə·bəl }

machine-sensible information |COMPUT SCI| Information in a form which can be read by a specified machine. { mə'shēn ¦sen·sə·bəl ,in·fər'mā·shən }

machine-spoiled time |COMPUT SCI| Computer time wasted on production runs that cannot be completed or whose results are made worthless by a computer malfunction, plus extensions of running time on runs that are hampered by a malfunction. { mə'shēn ¦spȯild ,tīm }

machine switching system *See* automatic exchange. { mə'shēn 'swich·iŋ ,sis·təm }

machine-tool control |COMPUT SCI| The computer control of a machine tool for a specific job by means of a special programming language. { mə'shēn ,tül kən,trōl }

machine translation *See* mechanical translation. { mə'shēn tranz'lā·shən }

machine vision *See* computer vision. { mə'shēn ,vizh·ən }

machine word |COMPUT SCI| The fundamental unit of information in a word-organized digital computer, consisting of a fixed number of binary bits, decimal digits, characters, or bytes. { mə'shēn ,wərd }

macro *See* macroinstruction. { 'mak·rō }

macroassembler |COMPUT SCI| A program made up of one or more sequences of assembly language statements, each sequence represented by a symbolic name. { ¦mak·rō·ə'sem·blər }

macrocode |COMPUT SCI| A coding and programming language that assembles groups of computer instructions into single instructions. { 'mak·rə,kōd }

macrodefinition |COMPUT SCI| A statement that defines a macroinstruction and the set of ordinary instructions which it replaces. { ¦mak·rō ,def·ə'nish·ən }

macroexpansion |COMPUT SCI| Instructions generated by a macroinstruction and inserted into an assembly language program. { ¦mak·rō·ik'span·chən }

macro flow chart |COMPUT SCI| A graphical representation of the overall logic of a computer program in which entire segments or subroutines of the program are represented by single blocks and no attempt is made to specify the detailed operation of the program. { 'mak·rō 'flō ,chärt }

macrogeneration |COMPUT SCI| The creation of many machine instructions from one macroword. { ¦mak·rō,jen·ə¦rā·shən }

macrogenerator *See* macroprocessor. { ¦mak·rō'jen·ə,rād·ər }

macroinstruction |COMPUT SCI| An instruction in a higher-level language which is equivalent to a specific set of one or more ordinary instructions in the same language. Also known as macro. { ¦mak·rō·in'strək·shən }

macrolanguage |COMPUT SCI| A computer language that manipulates stored strings in which particular sites of the string are marked so that other strings can be inserted in these sites when the stored string is brought forth. { 'mak·rō ,laŋ·gwij }

macrolibrary |COMPUT SCI| A collection of prewritten specialized but unparticularized routines (or sets of statements) which reside in mass storage. { 'mak·rō,lī,brer·ē }

macroparameter |COMPUT SCI| The character in a macro operand which will complete an open subroutine created by the macroinstruction. { ,mak·rō·pə'ram·əd·ər }

macroprocessor |COMPUT SCI| A piece of software which replaces each macroinstruction in a computer program by the set of ordinary instructions which it stands for. Also known as macrogenerator. { ¦mak·rə'präs,es·ər }

macroprogram |COMPUT SCI| A computer program that consists of macroinstructions. { ma'krō'prō,grəm }

macroprogramming |COMPUT SCI| The process of writing machine procedure statements in terms of macroinstructions. { ¦mak·rō'prō,gram·iŋ }

macroskeleton |COMPUT SCI| A definition of a macroinstruction in a precise but content-free way, which can be particularized by a processor as directed by macroinstruction parameters. Also known as model. { ¦mak·rō'skel·ə·tən }

macrosystem |COMPUT SCI| A language in which words represent a number of machine instructions. { 'mak·rō,sis·təm }

macro virus |COMPUT SCI| A virus that hides inside document and spreadsheet files used by popular word processing and spreadsheet applications. { ¦mak·rō 'vī·rəs }

madistor |ELECTR| A cryogenic semiconductor device in which injection plasma can be steered or controlled by transverse magnetic fields, to give the action of a switch. { ma'dis·tər }

MADT *See* microalloy diffused transistor.

MAG *See* maximum available gain.

magamp *See* magnetic amplifier. { 'mag,amp }

magazine |COMPUT SCI| A holder of microfilm or magnetic recording media strips. { ¦mag·ə¦zēn }

magic eye See cathode-ray tuning indicator. { 'maj·ik 'ī }

magic tee See hybrid tee. { 'maj·ik 'tē }

magnesium anode [ELEC] Bar of magnesium buried in the earth, connected to an underground cable to prevent cable corrosion due to electrolysis. { mag'nē·zē·əm 'an,ōd }

magnesium cell [ELEC] A primary cell in which the negative electrode is made of magnesium or one of its alloys. { mag'nē·zē·əm ¦sel }

magnesium-copper sulfide rectifier [ELECTR] Dry-disk rectifier consisting of magnesium in contact with copper sulfide. { mag'nē·zē·əm 'käp·ər ¦səl,fīd 'rek·tə,fī·ər }

magnesium-manganese dioxide cell [ELEC] Type of electrochemical (dry) cell battery in which the active elements are magnesium and manganese dioxide. { mag'nē·zē·əm 'maŋ·gə ,nēs dī'äk,sīd ,sel }

magnesium-silver chloride cell [ELEC] A reserve primary cell that is activated by adding water; active elements are magnesium and silver chloride. { mag'nē·zē·əm 'sil·vər 'klór,īd ,sel }

magnesyn [ELEC] A portion of a repeater unit, a two-pole permanently magnetized rotor within a three-phase two-pole delta-connected stator which carries the indicating pointer and is free to rotate in any direction. { 'mag·nə,sin }

magnetically focused tube [ELECTR] An image tube in which electrons from the photocathode are accelerated by electric fields and forced into tight spiral paths as they are further accelerated by a uniform magnetic field down the center of the tube. { mag'ned·ə·klē ¦fōkəst 'tüb }

magnetic amplifier [ELECTR] A device that employs saturable reactors to modulate the flow of alternating-current electric power to a load in response to a lower-energy-level direct-current input signal. Abbreviated magamp. Also known as transductor. { mag'ned·ik 'am·plə,fī·ər }

magnetic bubble memory See bubble memory. { mag'ned·ik ¦bəb·əl ,mem·rē }

magnetic card [COMPUT SCI] A card with a magnetic surface on which data can be stored by selective magnetization. { mag'ned·ik 'kärd }

magnetic card file [COMPUT SCI] A direct-access storage device in which units of data are stored on magnetic cards contained in one or more magazines from which they are withdrawn, when addressed, to be carried at high speed past a read/write head. { mag'ned·ik 'kärd ,fīl }

magnetic cell [ELECTR] One unit of a magnetic memory, capable of storing one bit of information as a zero state or a one state. { mag'ned·ik 'sel }

magnetic character [COMPUT SCI] A character printed with magnetic ink, as on bank checks, for reading by machines as well as by humans. { mag'ned·ik 'kar·ik·tər }

magnetic character reader [COMPUT SCI] A character reader that reads special type fonts printed in magnetic ink, such as those used on bank checks, and feeds the character data directly to a computer for processing. { mag'ned·ik ¦kar·ik·tər ,rēd·ər }

magnetic character sorter [COMPUT SCI] A device that reads documents printed with magnetic ink; all data read are stored, and records are sorted on any required field. Also known as magnetic document sorter-reader. { mag'ned·ik ¦kar·ik·tər ,sȯrd·ər }

magnetic core Also known as core. [ELECTR] A configuration of magnetic material, usually a mixture of iron oxide or ferrite particles mixed with a binding agent and formed into a tiny doughnutlike shape, that is placed in a spatial relationship to current-carrying conductors, and is used to maintain a magnetic polarization for the purpose of storing data, or for its nonlinear properties as a logic element. Also known as memory core. [ELECTROMAG] A quantity of ferrous material placed in a coil or transformer to provide a better path than air for magnetic flux, thereby increasing the inductance of the coil and increasing the coupling between the windings of a transformer. { mag'ned·ik 'kȯr }

magnetic core multiplexer [COMPUT SCI] A device which channels many bit inputs into a single output. { mag'ned·ik ¦kȯr 'məl·tə,plek·sər }

magnetic core storage [COMPUT SCI] A computer storage system in which each of thousands of magnetic cores stores one bit of information; current pulses are sent through wires threading through the cores to record or read out data; used extensively in the 1950s and 1960s, and still used in specialized military applications and in space vehicles. Also known as core memory; core storage. { mag'ned·ik ¦kȯr 'stȯr·ij }

magnetic cumulative generator See flux-compression generator. { mag¦ned·ik ¦kyü·myə ,lād·iv 'jen·ə,rād·ər }

magnetic deflection [ELECTR] Deflection of an electron beam by the action of a magnetic field, as in a television picture tube. { mag'ned·ik di'flek·shən }

magnetic delay line [ELECTR] Delay line, used for the storage of data in a computer, consisting essentially of a metallic medium along which the velocity of the propagation of magnetic energy is small compared to the speed of light; storage is accomplished by the recirculation of wave patterns containing information, usually in binary form. { mag'ned·ik di'lā ,līn }

magnetic dipole antenna [ELECTROMAG] Simple loop antenna capable of radiating an electromagnetic wave in response to a circulation of electric current in the loop. { mag'ned·ik'dī,pōl an,ten·ə }

magnetic disk [COMPUT SCI] A rotating circular plate having a magnetizable surface on which information may be stored as a pattern of polarized spots on concentric recording tracks. { mag'ned·ik 'disk }

magnetic document sorter-reader See magnetic character sorter. { mag'ned·ik ¦däk·yə·mənt 'sȯrd·ər 'rēd·ər }

magnetic domain memory See domain-tip memory. { mag'ned·ik də'mān ,mem·rē }

magnetic drum See drum. { mag'ned·ik 'drəm }

magnetic drum receiving equipment [ELECTR] Radar developed for detection of targets beyond line of sight using ionospheric reflection and very low power. { mag'ned·ik 'drəm ri'sēv·iŋ i ˌkwip·mənt }

magnetic drum storage *See* drum. { mag'ned·ik ˈdrəm 'stȯr·ij }

magnetic earphone [ENG ACOUS] An earphone in which variations in electric current produce variations in a magnetic field, causing motion of a diaphragm. { mag'ned·ik 'irˌfōn }

magnetic element [ENG] That part of an instrument producing or influenced by magnetism. { mag'ned·ik 'el·ə·mənt }

magnetic film *See* magnetic thin film. { mag'ned·ik 'film }

magnetic firing circuit [ELECTR] A type of firing circuit in which the capacitor is discharged through the igniter by saturating a reactor, which is connected in series with the capacitor; often used in ignitron rectifiers to obtain longer life and greater reliability than is possible with thyratron firing tubes. { mag'ned·ik 'fīr·iŋ ˌsər·kət }

magnetic flux quantum [ELEC] A fundamental unit of magnetic flux, the total magnetic flux in a fluxoid in a type II superconductor, equal to $h/(2e)$, where h is Planck's constant and e is the magnitude of the electron charge, or approximately 2.07×10^{-15} weber. { magˌned·ik 'fläks ˌkwän·təm }

magnetic head [ELECTR] The electromagnet used for reading, recording, or erasing signals on a magnetic disk, drum, or tape. Also known as magnetic read/write head. { mag'ned·ik 'hed }

magnetic-ink character recognition [COMPUT SCI] That branch of character recognition which involves the sensing of magnetic-ink characters for the purpose of determining the character's most probable identity. Abbreviated MICR. { mag'ned·ik ˈiŋk 'kar·ik·tər ˌrek·igˌnish·ən }

magnetic loudspeaker [ENG ACOUS] Loudspeaker in which acoustic waves are produced by mechanical forces resulting from magnetic reactions. Also known as magnetic speaker. { mag'ned·ik 'laudˌspēk·ər }

magnetic memory *See* magnetic storage. { mag 'ned·ik 'mem·rē }

magnetic memory plate [ELECTR] Magnetic memory consisting of a ferrite plate having a grid of small holes through which the read-in and read-out wires are threaded; printed wiring may be applied directly to the plate in place of conventionally threaded wires, permitting mass production of plates having a high storage capacity. { mag'ned·ik ˈmem·rē ˌplāt }

magnetic microphone [ENG ACOUS] A microphone consisting of a diaphragm acted upon by sound waves and connected to an armature which varies the reluctance in a magnetic field surrounded by a coil. Also known as reluctance microphone; variable-reluctance microphone. { mag'ned·ik 'mī·krəˌfōn }

magnetic modulator [ELECTR] A modulator in which a magnetic amplifier serves as the modulating element for impressing an intelligence signal on a carrier. { mag'ned·ik 'mäj·əˌlād·ər }

magnetic pinch *See* pinch effect. { mag'ned·ik 'pinch }

magnetic printing [ELECTR] The permanent and usually undesired transfer of a recorded signal from one section of a magnetic recording medium to another when these sections are brought together, as on a reel of tape. Also known as crosstalk; magnetic transfer. { mag'ned·ik 'print·iŋ }

magnetic random access memory [COMPUT SCI] A nonvolatile memory in which submicrometer-sized magnetic structures store digital information in their magnetic orientation. Abbreviated MRAM. { magˌned·ik ˌran·dəm 'akˌses ˌmem·rē }

magnetic read/write head *See* magnetic head. { mag'ned·ik ˌrēd ˈrīt ˌhed }

magnetic recorder [ELECTR] An instrument that records information, generally in the form of audio-frequency or digital signals, on magnetic tape or magnetic wire as magnetic variations in the medium. { mag'ned·ik ri'kȯrd·ər }

magnetic recording [ELECTR] Recording by means of a signal-controlled magnetic field. { mag'ned·ik ri'kȯrd·iŋ }

magnetic reproducer [ELECTR] An instrument which moves a magnetic recording medium, such as a tape, wire, or disk, past an electromagnetic transducer that converts magnetic signals on the medium into electric signals. { mag'ned·ik ˌrē·prə'dü·sər }

magnetic reproducing [ELECTR] The conversion of information on magnetic tape or magnetic wire, which was originally produced by electric signals, back into electric signals. { mag'ned·ik ˌrē·prə'dü·siŋ }

magnetic rotation [OPTICS] **1.** In a weak magnetic field, the rotation of the plane of polarization of fluorescent light emitted perpendicular to the field and perpendicular to the propagation direction of the incident light. **2.** *See* Faraday effect. { mag'ned·ik rō'tā·shən }

magnetic shift register [COMPUT SCI] A shift register in which the pattern of settings of a row of magnetic cores is shifted one step along the row by each new input pulse; diodes in the coupling loops between cores prevent backward flow of information. { mag'ned·ik 'shift ˌrej·ə·stər }

magnetic sound track [ENG ACOUS] A magnetic tape, attached to a motion picture film, on which a sound recording is made. { mag'ned·ik 'saůn ˌtrak }

magnetic speaker *See* magnetic loudspeaker. { mag'ned·ik 'spēk·ər }

magnetic spin transistor *See* magnetic switch. { magˌned·ik ˌspin tran'zis·tər }

magnetic stepping motor *See* stepper motor. { mag'ned·ik 'step·iŋ ˌmōd·ər }

magnetic storage [COMPUT SCI] A device utilizing magnetic properties of materials to store data; may be roughly divided into two categories, moving (drum, disk, tape) and static (core,

thin film). Also known as magnetic memory. { mag'ned·ik 'stôr·ij }

magnetic stripe [COMPUT SCI] A small length of magnetic tape on a card or badge, containing data that is machine-readable. { mag'ned·ik 'strīp }

magnetic striped ledger [COMPUT SCI] A ledger sheet used on a special typing device which stores the coded data on a magnetic strip on the sheet while typing out the data on the sheet; the magnetic strip can be read directly by a special reader linked to a computer. { mag'ned·ik ¦strīpt 'lej·ər }

magnetic switch [ELECTR] A switching device consisting of three metallic layers (a paramagnetic layer between two ferromagnetic layers), whose action is based on electron spin and is controlled by a small magnetic field. Also known as bipolar spin device; bipolar spin switch; magnetic spin transistor; spin transistor; spin valve. { mag'ned·ik 'swich }

magnetic tape [ELECTR] A plastic, paper, or metal tape that is coated or impregnated with magnetizable iron oxide particles, used in magnetic recording and in computer storage chiefly for archiving and backup. { mag'ned·ik 'tāp }

magnetic tape core [ELECTR] Toroidal core formed by winding a strip of thin magnetic core material around a form. { mag'ned·ik ¦tāp 'kōr }

magnetic tape file operation [COMPUT SCI] All the jobs related to creating, sorting, inputting, and maintenance of magnetic tapes in a magnetic tape environment. { mag'ned·ik ¦tāp 'fīl ˌäp·ə ˌrā·shən }

magnetic tape group [COMPUT SCI] A cabinet containing two or more magnetic tape units, each of which can operate independently, but which sometimes share one or more channels with which they communicate with a central processor. Also known as tape cluster; tape group. { mag'ned·ik ¦tāp ˌgrüp }

magnetic tape librarian [COMPUT SCI] Routine which provides a computer the means to automatically run a sequence of programs. { mag'ned·ik ¦tāp lī,brer·ē·ən }

magnetic tape master file [COMPUT SCI] A magnetic tape consisting of a set of related elements such as is found in a payroll, an inventory, or an accounts receivable; a master file is, as a rule, periodically updated. { mag'ned·ik ¦tāp ¦mas·tər 'fīl }

magnetic tape parity [COMPUT SCI] A check performed on the data bits on a tape; usually an odd (or even) condition is expected and the occurrence of the wrong parity indicates the presence of an error. { mag'ned·ik ¦tāp 'par·əd·ē }

magnetic tape reader [ELECTR] A computer device that is capable of reading information recorded on magnetic tape by transforming this information into electric pulses. { mag'ned·ik ¦tāp ˌrēd·ər }

magnetic tape station [COMPUT SCI] On-line device that provides write, read, and erase data on magnetic tape to permit high-speed storage of data. { mag'ned·ik ¦tāp ˌstā·shən }

magnetic tape storage [COMPUT SCI] Storage of binary information on magnetic tape, generally on 5 to 10 tracks, with up to several thousand bits per inch (more than a thousand bits per centimeter) on each track. { mag'ned·ik ¦tāp ˌstór·ij }

magnetic tape switching unit [COMPUT SCI] A device which permits the computer operator to bring into play any number of tape drives as required by the system. { mag'ned·ik ¦tāp 'swich·iŋ ˌyü·nət }

magnetic tape terminal [COMPUT SCI] Device which converts pulses in series to pulses in parallel while checking for bit parity prior to the entry in buffer storage. { mag'ned·ik ¦tāp 'tər·mən·əl }

magnetic tape unit [COMPUT SCI] A computer unit that usually consists of a tape transport, reading and recording heads, and associated electric and electronic equipment. { mag'ned·ik ¦tāp ˌyü·nət }

magnetic thin film [SOLID STATE] A sheet or cylinder of magnetic material less than 5 micrometers thick, usually possessing uniaxial magnetic anisotropy; used mainly in computer storage and logic elements. Also known as ferromagnetic film; magnetic film. { mag'ned·ik 'thin ¦film }

magnetic transfer *See* magnetic printing. { mag'ned·ik 'tranz·fər }

magnetic tunnel junction [ELECTR] A magnetic storage and switching device in which two magnetic layers are separated by an insulating barrier, typically aluminum oxide, that is only 1–2 nanometers thick, allowing an electronic current whose magnitude depends on the orientation of both magnetic layers to tunnel through the barrier when it is subject to a small electric bias. { mag¦ned·ik 'tən·əl ˌjəŋk·shən }

magnetizing current [ELEC] The current that flows through the primary winding of a power transformer when no loads are connected to the secondary winding; this current establishes the magnetic field in the core and furnishes energy for the no-load power losses in the core. Also known as exciting current. { 'mag·nəˌtiz·iŋ ˌkə·rənt }

magneto [ELEC] An alternating-current generator that uses one or more permanent magnets to produce its magnetic field; frequently used as a source of ignition energy on tractor, marine, industrial, and aviation engines. Also known as magnetoelectric generator. { mag'nēd·ō }

magnetoelectric generator *See* magneto. { mag ¦nēd·ō·i'lek·trik 'jen·əˌrād·ər }

magnetoelectronics [ELECTR] The use of electron spin (as opposed to charge) in electronic devices. Also known as spin electronics; spintronics. { mag,ned·ō·i·lek'trän·iks }

magnetohydrodynamic generator [ELEC] A system for generating electric power in which the kinetic energy of a flowing conducting fluid is converted to electric energy by a magnetohydrodynamic interaction. Abbreviated MHD

generator. { mag¦nēd·ō,hī·drə·dī'nām·ik 'jen·ə ,rād·ər }

magnetooptical switch [COMPUT SCI] A thin-film modulator which acts on a laser beam by polarization, causing the beam to emerge from the output prism at a different angle. { mag ¦nēd·ō¦äp·tə·kəl 'swich }

magnetooptic disk [COMMUN] A data storage device in which information is stored in small magnetic marks along tracks on a rotating disk; the information is read by sensing the change in polarization of reflected focused light and can be altered by using a higher-power focused light spot to locally heat the medium and, with the application of an external magnetic field, switch the magnetic domains of the material. { mag ,ned·ō,äp·tik 'disk }

magnetooptic Kerr effect [OPTICS] Changes produced in the optical properties of a reflecting surface of a ferromagnetic substance when the substance is magnetized; this applies especially to the elliptical polarization of reflected light, when the ordinary rules of metallic reflection would give only plane polarized light. Also known as Kerr magnetooptical effect. { mag¦nēd·ō ¦äp·tik 'kər i,fekt }

magnetooptic material [OPTICS] A material whose optical properties are changed by an applied magnetic field. { mag¦nēd·ō¦äp·tik mə'tir·ē·əl }

magnetooptic recording [ENG] An erasable data storage technology in which data are stored on a rotating disk in a thin magnetic layer that may be switched between two magnetization states by the combination of a magnetic field and a pulse of light from a diode laser. { mag,ned·ō,äp·tik ri'kȯrd·iŋ }

magnetooptics [OPTICS] The study of the effect of a magnetic field on light passing through a substance in the field. { mag¦nēd·ō¦äp·tiks }

magnetoresistance [ELECTR] The change in the electrical resistance of a material when it is subjected to an applied magnetic field, this property has widespread application in sensors and magnetic read heads. [ELECTROMAG] The change in electrical resistance produced in a current-carrying conductor or semiconductor on application of a magnetic field. { mag¦nēd·ō·ri'zis·təns }

magnetoresistive memory [ELECTR] A random-access memory that uses the magnetic state of small ferromagnetic regions to store data, plus magnetoresistive devices to read the data, all integrated with silicon integrated-circuit electronics. { mag,ned·ō·ri,zis·tiv 'mem·rē }

magnetoresistor [ELECTR] Magnetic field-controlled variable resistor. { mag¦nēd·ō·ri'zis·tər }

magnetostrictive filter [ELECTR] Filter network which uses the magnetostrictive phenomena to form high-pass, low-pass, band-pass, or band-elimination filters; the impedance characteristic is the inverse of that of a crystal. { mag¦nēd·ō ¦strik·tiv 'fil·tər }

magnetostrictive loudspeaker [ENG ACOUS] Loudspeaker in which the mechanical forces result from the deformation of a material having magnetostrictive properties. { mag¦nēd·ō¦strik· tiv 'laud,spēk·ər }

magnetostrictive microphone [ENG ACOUS] Microphone which depends for its operation on the generation of an electromotive force by the deformation of a material having magneto-strictive properties. { mag¦nēd·ō¦strik·tiv 'mī·krə,fōn }

magnetostrictive oscillator [ELECTR] An oscillator whose frequency is controlled by a magnetostrictive element. { mag¦nēd·ō¦strik·tiv 'äs·ə ,lād·ər }

magneto telephone set [ELEC] Local battery telephone set in which current for signaling by the telephone station is supplied from a local hand generator, usually a magneto. { mag'nēd·ō 'tel·ə,fōn ,set }

magnetovision [ENG] A method of measuring and displaying magnetic field distributions in which scanning results from a thin-film Permalloy magnetoresistive sensor are processed numerically and presented in the form of a color map on a video display unit. { mag'ned·ə,vizh·ən }

magnetron [ELECTR] One of a family of crossed-field microwave tubes, wherein electrons, generated from a heated cathode, move under the combined force of a radial electric field and an axial magnetic field in such a way as to produce a bunching of electrons and hence microwave radiation. Useful in the frequency range 1–40 gigahertz; a pulsed microwave radiation source for radar and continuous source for microwave cooking. { 'mag·nə,trän }

magnetron oscillator [ELECTR] Oscillator circuit employing a magnetron tube. { 'mag·nə,trän 'äs·ə,lād·ər }

magnetron pulling [ELECTR] Frequency shift of a magnetron caused by factors which vary the standing waves or the standing-wave ratio on the radio-frequency lines. { 'mag·nə,trän 'pul·iŋ }

magnetron pushing [ELECTR] Frequency shift of a magnetron caused by faulty operation of the modulator. { 'mag·nə,trän 'pùsh·iŋ }

magnetron vacuum gage [ELECTR] A vacuum gage that is essentially a magnetron operated beyond cutoff in the vacuum being measured. { 'mag·nə,trän 'vak·yəm ,gāj }

magnet wire [ELEC] The insulated copper or aluminum wire used in the coils of all types of electromagnetic machines and devices. { 'mag·nət ,wīr }

magnistor [ELECTR] A device that utilizes the effects of magnetic fields on injection plasmas in semiconductors such as indium antimonide. { mag'nis·tər }

mag-slip *See* synchro. { 'mag,slip }

mail box [COMPUT SCI] **1.** A portion of a computer's main storage that can be used to hold information about other devices. **2.** Computer storage facilities designed to hold electronic mail. { 'māl ,bäks }

mailbox name [COMPUT SCI] The first part of an electronic mail address, which identifies the storage space that has been set aside in a computer to receive a user's electronic mail messages. Also known as username. { 'māl ,bäks ,nām }

mailing list [COMMUN] A list of users of the Internet or another computer network who all receive copies of electronic mail messages. { 'māl·iŋ ˌlist }

mail merge [COMPUT SCI] The process of combining a form letter with a list of names and addresses to produce individualized letters. { 'māl ˌmərj }

main [ELEC] **1.** One of the conductors extending from the service switch, generator bus, or converter bus to the main distribution center in interior wiring. **2.** *See* power transmission line. { mān }

main-and-transfer bus [ELEC] A substation switching arrangement similar to a single bus but with an additional transfer bus provided. { 'mān ən 'tranz·fər ˌbəs }

main bang [ELECTR] In colloquial usage, a transmitted pulse within a radar system. { 'mān 'baŋ }

main clock *See* master clock. { 'mān 'kläk }

main controller [COMPUT SCI] A control unit assigned to direct the other control units in a computer system. { 'mān kən'trō·lər }

main distributing frame [ELEC] Frame which terminates the permanent outside lines entering the central office building on one side and the subscriber-line multiple cabling, trunk multiple cabling, and so on, used for associating an outside line with any desired terminal on the other side; it usually carries the control-office protective devices, and functions as a test point between line and office. Also known as main frame. { 'mān di'strib·yəd·iŋ ˌfrām }

main exciter [ELEC] Exciter which supplies energy for the field excitation of a principal electric machine. { 'mān ik'sīd·ər }

main frame [COMPUT SCI] **1.** A large computer. **2.** The part of a computer that contains the central processing unit, main storage, and associated control circuitry. Also known as frame. { 'mān ˌfrām }

main instruction buffer [COMPUT SCI] A section of storage in the instruction unit, 16 bytes in length, used to hold prefetched instructions. { 'mān in'strək·shən ˌbəf·ər }

main level [COMMUN] A range of allowed picture parameters defined by the MPEG-2 video coding specification. { 'mān 'lev·əl }

main lobe *See* major lobe. { 'mān 'lōb }

main loop [COMPUT SCI] A set of instructions that constitute the primary structure of a repetitive computer program. { 'mān ˌlüp }

main memory *See* main storage. { 'mān 'mem·rē }

main path [COMPUT SCI] The principal branch of a routine followed by a computer in the process of carrying out the routine. { 'mān 'path }

main profile [COMMUN] A subset of the syntax of the MPEG-2 video coding specification that is supported over a large range of applications. { 'mān 'prō,fil }

main program [COMPUT SCI] **1.** The central part of a computer program, from which control may be transferred to various subroutines and to which control is eventually returned. Also known as main routine. **2.** *See* executive routine. { 'mān 'prō·grəm }

main routine *See* executive routine; main program. { 'mān rü'tēn }

main station [COMMUN] Telephone station with a distinct call number designation, directly connected to a central office. { 'mān 'stā·shən }

main storage [COMPUT SCI] A digital computer's principal working storage, from which instructions can be executed or operands fetched for data manipulation. Also known as main memory. { 'mān 'stȯr·ij }

main sweep [ELECTR] On certain fire-control radar, the longest range scale available. { 'mān 'swēp }

maintenance pack [COMPUT SCI] A disk drive that is used to store copies of computer programs for the purpose of applying and testing changes made in the course of software maintenance. { 'mānt·ən·əns ˌpak }

maintenance routine [COMPUT SCI] A computer program designed to detect conditions which may give rise to a computer malfunction in order to assist a service engineer in performing routine preventive maintenance. { 'mānt·ən·əns rü ˌtēn }

maintenance time [COMPUT SCI] The time required for both corrective and preventive maintenance of a computer or other components of a computer system. { 'mānt·ən·əns ˌtīm }

main vector [COMMUN] A pair of numbers that represent the vertical and horizontal displacement of a region of a reference picture for MPEG-2 prediction. { 'mān 'vek·tər }

major cycle [COMPUT SCI] The time interval between successive appearances of a given storage position in a serial-access computer storage. { 'mā·jər 'sī·kəl }

majority carrier [ELECTR] The type of charge carrier, that is, electron or hole, that constitutes more than half the carriers in a semiconductor. { mə'jär·əd·ē 'kar·ē·ər }

majority element *See* majority gate. { mə'jär·əd·ē 'el·ə·mənt }

majority emitter [ELECTR] Of a transistor, an electrode from which a flow of minority carriers enters the interelectrode region. { mə'jär·əd·ē i'mid·ər }

majority gate [COMPUT SCI] A logic circuit which has one output and several inputs, and whose output is energized only if a majority of its inputs are energized. Also known as majority element; majority logic. { mə'jär·əd·ē 'gāt }

majority logic *See* majority gate. { mə'jär·əd·ē 'läj·ik }

major key [COMPUT SCI] The primary key for identifying a record. { 'mā·jər ˌkē }

major lobe [ELECTROMAG] Antenna lobe indicating the direction of maximum radiation or reception. Also known as main lobe. { 'mā·jər 'lōb }

major node [ELEC] A point in an electrical network at which three or more elements are connected together. Also known as junction. { 'mā·jər 'nōd }

major relay station [ELECTR] Tape relay station which has two or more trunk circuits connected thereto to provide an alternate route or to meet command requirements. { 'mā·jər 'rē,lā ,stā·shən }

major wave *See* long wave. { 'mā·jər 'wāv }

make [ELEC] Closing of relay, key, or other contact. { 'māk }

make-and-break circuit [ELEC] A circuit that is alternately opened and closed. { 'māk ən 'brāk ,sər·kət }

make-break operation [COMMUN] A circuit operation in which there is a cessation of current flow as a pulse transmission occurs. { 'māk 'brāk ,äp·ə,rā·shən }

make-busy [COMMUN] A switch whose activation makes a dial telephone line or group of telephone lines appear to be busy and thereby prevents completion of incoming calls. { 'māk 'biz·ē }

make contact [ELEC] Contact of a device which closes a circuit upon the operation of the device (normally open). { 'māk ,kän,takt }

makeup time [COMPUT SCI] The time required to rerun programs on a computer because of operator errors and other problems. { 'māk,əp ,tīm }

making current [ELEC] The peak value attained by the current during the first cycle after a switch, circuit breaker, or similar apparatus is closed. { 'māk·iŋ ,kə·rənt }

male connector [ELEC] An electrical connector with protruding contacts for joining with a female connector. { 'māl kə'nek·tər }

malfunction routine [COMPUT SCI] A program used in troubleshooting. { mal'fəŋk·shən rü,tēn }

malicious code [COMPUT SCI] Programming code that is capable of causing harm to availability, integrity of code or data, or confidentiality in a computing system; encompasses Trojan horses, viruses, worms, and trapdoors. { mə'lish·əs 'kōd }

management information system [COMMUN] A communication system in which data are recorded and processed to form the basis for decisions by top management of an organization. Abbreviated MIS. { 'man·ij·mənt ,in·fər'mā·shən ,sis·təm }

Manchester coding *See* phase encoding. { 'man·chə·stər ,kōd·iŋ }

Manchester plate [ELEC] A storage battery consisting of a heavy alloy grid with circular openings into which are pressed pure lead buttons that are made from lead tape by crimping and rolling to develop a large surface area and are coated with lead peroxide, PbO_2. { 'man·chə·stər ,plāt }

manifest constant [COMPUT SCI] A value that is assigned to a symbolic name at the beginning of a computer program and is not subject to change during execution. { 'man·ə,fest 'kän·stənt }

manipulated variable [COMPUT SCI] Variable whose value is being altered to bring a change in some condition. { mə'nip·yə,lād·əd 'ver·ē·ə·bəl }

manipulator [CONT SYS] An armlike mechanism on a robotic system that consists of a series of segments, usually sliding or jointed which grasp and move objects with a number of degrees of freedom, under automatic control. { mə'nip·yə ,lād·ərz }

man-machine system *See* human-machine system. { 'man mə'shēn 'sis·təm }

mantissa [COMPUT SCI] A fixed point number composed of the most significant digits of a given floating-point number. Also known as fixed-point part; floating-point coefficient. { man'tis·ə }

manual central office [COMMUN] Central office of a manual telephone system. { 'man·yə·wəl 'sen·trəl 'ȯf·əs }

manual control unit [CONT SYS] A portable, hand-held device that allows an operator to program and store instructions related to robot motions and positions. Also known as programming unit. { 'man·yə·wəl kən'trōl ,yü·nət }

manual exchange [COMMUN] Any exchange where calls are completed by an operator. { 'man·yə·wəl iks'chānj }

manual input [COMPUT SCI] The entry of data by hand into a device at the time of processing. { 'man·yə·wəl 'in,pút }

manual number generator *See* manual word generator. { 'man·yə·wəl 'nəm·bər ,jen·ə,rād·ər }

manual operation [COMPUT SCI] Any processing operation performed by hand. { 'man·yə·wəl ,äp·ə'rā·shən }

manual rate-aided tracking [ELECTR] Radar circuit which tracks individual targets by computing the velocity from position fixes inserted manually into the circuitry. { 'man·yə·wəl 'rāt ,ād·əd 'trak·iŋ }

manual ringing [COMMUN] Ringing which is started by the manual operation of a key and continues only while the key is held in operation. { 'man·yə·wəl 'riŋ·iŋ }

manual switchboard [ELEC] Telephone switchboard in which the connections are made manually, by plugs and jacks, or by keys. { 'man·yə·wəl 'swich,bȯrd }

manual switching [ELECTR] Method by which manual connection is made between two or more teletypewriter circuits. { 'man·yə·wəl 'swich·iŋ }

manual telephone set [ELECTR] Telephone set not equipped with a dial. { 'man·yə·wəl 'tel·ə ,fōn ,set }

manual telephone system [COMMUN] A telephone system in which connections between customers are ordinarily established manually by telephone operators in accordance with orders given verbally by calling parties. { 'man·yə·wəl 'tel·ə,fōn ,sis·təm }

manual word generator [COMPUT SCI] A device into which an operator can enter a computer word by hand, either for direct insertion into memory or to be held until it is read during the execution of a program. Also known as manual number generator. { 'man·yə·wəl 'wərd ,jen·ə,rād·ər }

many-to-many correspondence [COMPUT SCI] A structure that establishes relationships between items in a data base, such that one unit of data can relate to many units, and many units can relate back to one unit and to other units as well. { 'men·ē tə 'men·ē ,kär·ə'spän·dəns }

map [COMPUT SCI] **1.** An output produced by an assembler, compiler, linkage editor, or relocatable loader which indicates the (absolute or relocatable) locations of such elements as programs, subroutines, variables, or arrays. **2.** By extension, an index of the storage allocation on a magnetic disk or drum. { map }

Marconi antenna [ELECTROMAG] Antenna system of which the ground is an essential part, as distinguished from a Hertz antenna. { mär'kō·nē an'ten·ə }

marginal checking [ELECTR] A preventive-maintenance procedure in which certain operating conditions, such as supply voltage or frequency, are varied about their normal values in order to detect and locate incipient defective units. { 'mär·jən·əl 'chek·iŋ }

marginal relay [ELEC] Relay with a small margin between its nonoperative current value (maximum current applicable without operation) and its operative value (minimum current that operates the relay). { 'mär·jən·əl 'rē,lā }

marginal test [ELECTR] A test of electronic equipment in which conditions are varied until failures occur or faults can be detected, allowing measurement of permissible operating margins. { 'mär·jən·əl 'test }

maritime frequency bands [COMMUN] In the United States, a collection of radio frequencies allocated for communication between coast stations and ships or between ships. { 'mar·ə,tīm 'frē·kwən·sē ,banz }

maritime mobile satellite service [COMMUN] A mobile satellite service in which the mobile earth stations are located on board ships. Abbreviated MMSS. { ,mar·ə,tīm ¦mō·bəl 'sad·əl,īt ,sər·vəs }

maritime mobile service [COMMUN] A mobile service between coast stations and ship stations, or between ship stations, in which survival craft stations may also participate. { 'mar·ə,tīm 'mō·bəl ¦sər·vəs }

mark [COMMUN] The closed-circuit condition in telegraphic communication, during which the signal actuates the printer; the opposite of space. [COMPUT SCI] A distinguishing feature used to signal some particular location or condition. { märk }

mark detection [COMPUT SCI] That class of character recognition systems which employs coded documents, in the form of boxes or windows, in order to convey intended information by means of pencil or ink marks made in specific boxes. { 'märk di,tek·shən }

mark-hold [COMMUN] The transmission of a steady mark to indicate that there is no traffic over a telegraph channel; the upper marking frequency of a duplex channel (2225 hertz) is used to disable echo suppressors which may interfere with data communications. { ¦märk ¦hōld }

marking and spacing intervals [COMMUN] Intervals of closed and open conditions in transmission circuits. { ¦mär·kiŋ ən ¦spās·iŋ 'in·tər·vəlz }

marking bias [COMMUN] Bias distortion that lengthens the marking impulse. { 'mär·kiŋ ,bī·əs }

marking current [ELEC] Magnitude and polarity of current in the line when the receiving mechanism is in the operating position. { 'mär·kiŋ ,kə·rənt }

marking-end distortion [COMMUN] End distortion that lengthens the marking impulse. { 'mär·kiŋ ¦end di,stȯr·shən }

marking pulse [ELEC] In a teletypewriter, the signal interval during which time the teletypewriter selector unit is operated. { 'mär·kiŋ ,pəls }

marking wave [ELEC] In telegraphic communications, that portion of the emission during which the active portions of the code character are being transmitted. Also known as keying wave. { 'mär·kiŋ ,wāv }

Markov-based model [COMPUT SCI] A model that represents a computer system by a Markov chain, which represents the set of all possible states of the system, with the possible transitions between these states. { 'mär,kōf ,bāst ,mäd·əl }

mark reading [COMPUT SCI] In character recognition, that form of mark detection which employs a photoelectric device to locate and convey intended information; the information appears as special marks on sites (windows) within the document coding area. { 'märk ,rēd·iŋ }

mark sensing [COMPUT SCI] In character recognition, that form of mark detection which depends on the conductivity of graphite pencil marks to locate and convey intended information; the information appears as special marks on sites (windows) within the document coding area. { 'märk ,sens·iŋ }

mark-space multiplier [ELECTR] A multiplier used in analog computers in which one input controls the mark-to-space ratio of a square wave while the other input controls the amplitude of the wave, and the output, obtained by a smoothing operation, is proportional to the average value of the signal. Also known as time-division multiplier. { ¦märk ¦spās 'məl·tə ,plī·ər }

mark-space ratio *See* mark-to-space ratio. { ¦märk ¦spās 'rā·shō }

mark-to-space ratio [ELECTR] The ratio of the duration of the positive-amplitude part of a square wave to that of the negative-amplitude part. Also known as mark-space ratio. { ¦märk ¦tə ¦spās 'rā·shō }

mark-to-space transition [COMMUN] The process of switching from a mark to a space. { ¦märk ¦tə ¦spās tran'zish·ən }

markup [COMPUT SCI] The process of adding information (tags) to an electronic document that are not part of the content but describe its structure or elements. { 'märk,əp }

markup language [COMPUT SCI] A set of rules and procedures for markup. { 'märk,əp ,laŋ·gwij }

Marx circuit [ELEC] An electric circuit used in an impulse generator in which capacitors are charged in parallel through charging resistors, and then connected in series and discharged through the test piece by the simultaneous sparkover of spark gaps. { 'märks ,sər·kət }

maser amplifier [ELECTR] A maser which is used to increase the power produced by another maser. { 'mā·zər 'am·plə,fīər }

MA service *See* multiple-access service. { ¦em'ā ,sər·vəs }

mask [ELECTR] A thin sheet of metal or other material containing an open pattern, used to shield selected portions of a semiconductor or other surface during a deposition process. { mask }

maskable interrupt [COMPUT SCI] An interrupt that can be allowed to occur or prevented from occurring by software. { ¦mas·kə·bəl 'int·ə,rəpt }

masking [COMPUT SCI] **1.** Replacing specific characters in one register by corresponding characters in another register. **2.** Extracting certain characters from a string of characters. [ELECTR] **1.** Using a covering or coating on a semiconductor surface to provide a masked area for selective deposition or etching. **2.** A programmed procedure for eliminating radar coverage in areas where such transmissions may be of use to the enemy for navigation purposes, by weakening the beam in appropriate directions or by use of additional transmitters on the same frequency at suitable sites to interfere with homing; also used to suppress the beam in areas where it would interfere with television reception. { 'mask·iŋ }

mask matching [COMPUT SCI] In character recognition, a method employed in character property detection in which a correlation or match is attempted between a specimen character and each of a set of masks representing the characters to be recognized. { 'mask ,mach·iŋ }

mask register [COMPUT SCI] Filter which determines the parts of a word which are to be tested. { 'mask ,rej·ə·stər }

mask word [COMPUT SCI] A word modifier used in a logical AND operation. { 'mask ,wərd }

Mason's theorem [CONT SYS] A formula for the overall transmittance of a signal flow graph in terms of transmittances of various paths in the graph. { 'mās·ənz ,thir·əm }

massage [COMPUT SCI] To process data, primarily to convert it into a more useful form or into a form that will simplify processing. { mə'säzh }

mass communication [COMMUN] Communication which is directed to or reaches an appreciable fraction of the population. { 'mas kə ,myü·nə'kā·shən }

mass conversion [COMPUT SCI] The transfer of data from one computer system to another, in which all the data is converted in a single operation, rather than in gradual increments. { 'mas kən,vər·zhən }

mass data multiprocessing [COMPUT SCI] The basic concept of time sharing, with many inquiry stations to a central location capable of on-line data retrieval. { 'mas ¦dad·ə ,məl·ti'prä,ses·iŋ }

mass-memory unit [COMPUT SCI] Drum or disk memory that provides rapid access bulk storage for messages that are awaiting availability of outgoing channels. { 'mas 'mem·rē ,yü·nət }

mass resistivity [ELEC] The product of the electrical resistance of a conductor and its mass, divided by the square of its length; the product of the electrical resistivity and the density. { 'mas ,rē,zis'tiv·əd·ē }

mass storage [COMPUT SCI] A computer storage with large capacity, especially one whose contents are directly accessible to a computer's central processing unit. { 'mas 'stȯr·ij }

mass-storage system [COMPUT SCI] A computer system containing a large number of storage devices, with one of these devices containing the master file of the operating system, routines, and library routines. { 'mas ¦stȯr·ij ,sis·təm }

master antenna television system [COMMUN] A network that distributes television signals from a common antenna to apartments or dwellings under collective ownership. Abbreviated MATV system. { 'mas·tər an¦ten·ə 'tel·ə,vizh·ən ,sis·təm }

master arm [ENG] A component of a remote manipulator whose motions are automatically duplicated by a slave arm, sometimes with changes of scale in displacement or force. { 'mas·tər 'ärm }

master clock [COMPUT SCI] The electronic or electric source of standard timing signals, often called clock pulses, required for sequencing the operation of a computer. Also known as main clock; master synchronizer; master timer. { 'mas·tər 'kläk }

master console *See* console. { 'mas·tər 'kän,sōl }

master control [COMMUN] The control console that contains the main program controls for a radio or television transmission system or network. [COMPUT SCI] A computer program, oriented toward applications, which carries out the highest level of control in a hierarchy of programs, routines, and subroutines. { 'mas·tər kən¦trōl }

master control interrupt [COMPUT SCI] A signal which causes the master control program to take over control of a computer system. { 'mas·tər kən¦trōl 'in·tə,rəpt }

master data [COMPUT SCI] A set of data which are rarely changed, or changed in a known and constant manner. { 'mas·tər 'dad·ə }

master file [COMPUT SCI] **1.** A computer file containing relatively permanent information, usually updated periodically, such as subscriber records or payroll data other than time worked. **2.** A computer file that is used as an authoritative source of data in carrying out a particular job on the computer. { 'mas·tər 'fīl }

master frequency meter *See* integrating frequency meter. { 'mas·tər 'frē·kwən·sē ,mēd·ər }

master gain [ELECTR] Control of overall gain of an amplifying system as opposed to varying the gain of several individual inputs. { 'mas·tər 'gān }

master group [COMMUN] In carrier telephony, ten supergroups (600 voice channels) multiplexed together and treated as a unit. { 'mas·tər ,grüp }

master instruction tape [COMPUT SCI] A computer magnetic tape on which all programs for a system of runs are recorded. { 'mas·tər in'strək·shən ,tāp }

master mode [COMPUT SCI] The mode of operation of a computer system exercised by the operating system or executive system, in which a privileged class of instructions, which user programs cannot execute, is permitted. Also known as monitor mode; privileged mode. { 'mas·tər ˌmōd }

master multivibrator [ELECTR] Master oscillator using a multivibrator unit. { 'mas·tər ˌməl·tī'vī ˌbrād·ər }

master oscillator [ELECTR] An oscillator that establishes the carrier frequency of the output of an amplifier or transmitter. { 'mas·tər 'äs·əˌlād·ər }

master-oscillator power amplifier [ELECTR] Transmitter using an oscillator followed by one or more stages of radio-frequency amplification. { 'mas·tər ˌäs·əˌlād·ər 'paù·ər ˌam·pləˌfī·ər }

master plan position indicator [ELECTR] In a radar system, a plan position indicator which controls remote indicators or repeaters. { 'mas·tər 'plan pə'zish·ən 'in·dəˌkād·ər }

master program file [COMPUT SCI] The tape record of all programs for a system of runs. { 'mas·tər 'prō·gramˌfīl }

master record [COMPUT SCI] The basic updated record which will be used for the next run. { 'mas·tər 'rek·ərd }

master routine *See* executive routine. { 'mas·tər rü'tēn }

master scheduler [COMPUT SCI] A program in a job entry system that assigns priorities to jobs submitted for execution. { 'mas·tər 'sked·yə·lər }

master/slave manipulator [ENG] A mechanical, electromechanical, or hydromechanical device which reproduces the hand or arm motions of an operator, enabling the operator to perform manual motions while separated from the site of the work. { 'mas·tər 'slāv mə'nip·yəˌlād·ər }

master/slave mode [COMPUT SCI] The feature ensuring the protection of each program when more than one program resides in memory. { 'mas·tər 'slāv ˌmōd }

master/slave system [COMPUT SCI] A system of interlinked computers under the control of one computer (master computer). { 'mas·tər 'slāv ˌsis·təm }

master switch [ELEC] **1.** Switch that dominates the operation contactors, relays, or other magnetically operated devices. **2.** Switch electrically ahead of a number of individual switches. { 'mas·tər ˌswich }

master synchronization pulse [COMMUN] In telemetry, a pulse distinguished from other telemetering pulses by amplitude and duration, used to indicate the end of a sequence of pulses. { 'mas·tər ˌsiŋ·krə·nə'zā·shən ˌpəls }

master synchronizer *See* master clock. { 'mas·tər 'siŋ·krəˌnīz·ər }

master system tape [COMPUT SCI] A monitor program centralizing the control of program operation by loading and executing any program on a system tape. { 'mas·tər 'sis·təm ˌtāp }

master tape [COMPUT SCI] A magnetic tape that contains data which must not be overwritten, such as an executive routine or master file; updating a master tape means generating a new master tape onto which supplementary data have been added. { 'mas·tər 'tāp }

master terminal [COMPUT SCI] A computer terminal that is used to monitor and control a computer system. { 'mas·tər 'tər·mən·əl }

master timer *See* master clock. { 'mas·tər 'tīm·ər }

match [COMPUT SCI] A data-processing operation similar to a merge, except that instead of producing a sequence of items made up from the input sequences, the sequences are matched against each other on the basis of some key. { mach }

matched filter [COMPUT SCI] In character recognition, a method employed in character property detection in which a vertical projection of the input character produces an analog waveform which is then compared to a set of stored waveforms for the purpose of determining the character's identity. [ELECTR] A filter with the property that, when the input consists of noise in addition to a specified desired signal, the signal-to-noise ratio is the maximum which can be obtained in any linear filter. { 'macht 'fil·tər }

matched impedance [ELEC] An impedance of a load which is equal to the impedance of a generator, so that maximum power is delivered to the load. { 'macht im'pēd·əns }

matched load [ELECTR] A load having the impedance value that results in maximum absorption of energy from the signal source. { 'macht 'lōd }

matched transmission line [ELEC] Transmission line terminated with a load equivalent to its characteristic impedance. { 'macht tranz'mish·ən ˌlīn }

match gate *See* equivalence gate. { 'mach ˌgāt }

matching [COMPUT SCI] A computer problem-solving method in which the current situation is represented as a schema to be mapped into the desired situation by putting the two in correspondence. { 'mach·iŋ }

matching diaphragm [ELECTROMAG] Diaphragm consisting of a slit in a thin sheet of metal, placed transversely across a waveguide for matching purposes; the orientation of the slit with respect to the long dimension of the waveguide determines whether the diaphragm acts as a capacitive or inductive reactance. { 'mach·iŋ 'dī·əˌfram }

matching impedance [ELEC] Impedance value that must be connected to the terminals of a signal-voltage source for proper matching. { 'mach·iŋ imˌpēd·əns }

matching section [ELECTROMAG] A section of transmission line, a quarter or half wavelength long, inserted between a transmission line and a load to obtain impedance matching. { 'mach·iŋ ˌsek·shən }

matching stub [ELECTROMAG] Device placed on a radio-frequency transmission line which varies the impedance of the line; the impedance of the line can be adjusted in this manner. { 'mach·iŋ ˌstəb }

match processing [COMPUT SCI] The checking of two or more units of data for common characteristics. { 'mach 'prä,ses·iŋ }

math coprocessor *See* numeric processor extension. { 'math 'kō,prä,ses·ər }

mathematical check [COMPUT SCI] A programmed computer check of a sequence of operations, using the mathematical properties of that sequence. { ¦math·ə¦mad·ə·kəl 'chek }

mathematical function program [COMPUT SCI] A set of routinely used mathematical functions, such as square root, which are efficiently coded and called for by special symbols. { ¦math·ə¦mad·ə·kəl 'fəŋk·shən ,prō·grəm }

mathematical software [COMPUT SCI] The set of algorithms used in a computer system to solve general mathematical problems. { ¦math·ə¦mad·ə·kəl 'sōft,wer }

mathematical subroutine [COMPUT SCI] A computer subroutine in which a well-defined mathematical function, such as exponential, logarithm, or sine, relates the output to the input. { ¦math·ə¦mad·ə·kəl 'səb·rü,tēn }

matrix [COMPUT SCI] A latticework of input and output leads with logic elements connected at some of their intersections. [ELECTR] **1.** The section of an analog video system that transforms the red, green, and blue source signals into color-difference signals and combines them with the chrominance subcarrier. Also known as color coder; color encoder; encoder. **2.** The section of an analog color television receiver that transforms the color-difference signals into the red, green, and blue signals needed to drive the display device. Also known as color decoder; decoder. { 'mā·triks }

matrix algebra tableau [COMPUT SCI] The current matrix at the end of an iteration while running a linear program. { 'mā·triks ¦al·jə·brə ta'blō }

matrix-array camera [ELECTR] A solid-state video camera that has a rectangular array of light-sensitive elements or pixels. { 'mā·triks ə'rā ,kam·rə }

matrix printing [COMPUT SCI] High-speed printing in which characterlike configurations of dots are printed through the proper selection of wire ends from a matrix of wire ends. Also known as stylus printing; wire printing. { 'mā·triks 'print·iŋ }

matrix sound system [ENG ACOUS] A quadraphonic sound system in which the four input channels are combined into two channels by a coding process for recording or for stereo frequency-modulation broadcasting and decoded back into four channels for playback of recordings or for quadraphonic stereo reception. { 'mā·triks 'saund ,sis·təm }

matrix storage [COMPUT SCI] A computer storage in which coordinates are used to address the locations or circuit elements. Also known as coordinate storage. { 'mā·triks ,stȯr·ij }

mattress array *See* billboard array. { 'ma·trəs ə'rā }

MATV system *See* master antenna television system. { ¦em¦ā¦tē¦vē 'sis·təm }

mavar *See* parametric amplifier. { 'mā,vär }

maximum available gain [ELECTR] The theoretical maximum power gain available in a transistor stage; it is seldom achieved in practical circuits because it can be approached only when feedback is negligible. Abbreviated MAG. { 'mak·sə·məm ə¦vāl·ə·bəl 'gān }

maximum average power output [ELECTR] In television, the maximum radio-frequency output power that can occur under any combination of signals transmitted, averaged over the longest repetitive modulation cycle. { 'mak·sə·məm ¦av·rəj ¦paù·ər 'aùt,pùt }

maximum demand [ELEC] The greatest average value of the power, apparent power, or current consumed by a customer of an electric power system, the averages being taken over successive time periods, usually 15 or 30 minutes in length. { 'mak·sə·məm di'mand }

maximum keying frequency [ELECTR] In facsimile, the frequency in hertz that is numerically equal to the spot speed divided by twice the horizontal dimension of the spot. { 'mak·sə·məm 'kē·iŋ ,frē·kwən·sē }

maximum modulating frequency [ELECTR] Highest picture frequency required for a facsimile transmission system; the maximum modulating frequency and the maximum keying frequency are not necessarily equal. { 'mak·sə·məm 'mäj·ə,lād·iŋ ,frē·kwən·sē }

maximum operating frequency [COMPUT SCI] The highest rate at which the modules perform iteratively and reliably. { 'mak·sə·məm 'äp·ə ,rād·iŋ ,frē·kwən·sē }

maximum retention time [ELECTR] Maximum time between writing into and reading an acceptable output from a storage element of a charge storage tube. { 'mak·sə·məm ri'ten·chən ,tīm }

maximum signal level [ELECTR] In an amplitude-modulated facsimile system, the level corresponding to copy black or copy white, whichever has the highest amplitude. { 'mak·sə·məm 'sig·nəl ,lev·əl }

maximum unambiguous range [ELECTROMAG] The range beyond which the echo from a pulsed radar signal returns after generation of the next pulse, and can thus be mistaken as a short-range echo of the next cycle. { 'mak·sə·məm ,ən·am ¦big·yə·wəs 'rānj }

maximum undistorted power output [ELECTR] Of a transducer, the maximum power delivered under specified conditions with a total harmonic output not exceeding a specified percentage. { 'mak·sə·məm ,ən·di¦stȯrd·əd 'paù·ər ,aùt,pùt }

maximum usable frequency [COMMUN] The upper limit of the frequencies that can be used at a specified time for point-to-point radio transmission involving propagation by reflection from the regular ionized layers of the ionosphere. Abbreviated MUF. { 'mak·sə·məm ¦yü·zə·bəl 'frē·kwən·sē }

Maxwell bridge [ELEC] A four-arm alternating-current bridge used to measure inductance (or capacitance) in terms of resistance and

capacitance (or inductance); bridge balance is independent of frequency. Also known as Maxwell-Wien bridge; Wien-Maxwell bridge. { 'mak,swel ,brij }

Maxwell equations *See* Maxwell field equations. { 'mak,swel i,kwā·zhənz }

Maxwell field equations [ELECTROMAG] Four differential equations which relate the electric and magnetic fields to electric charges and currents, and form the basis of the theory of electromagnetic waves. Also known as electromagnetic field equations; Maxwell equations. { 'mak ,swel 'fēld i,kwā·zhənz }

Maxwell's cyclic currents *See* mesh currents. { 'mak,swelz 'sī·klik 'kə·rənts }

Maxwell's electromagnetic theory [ELECTROMAG] A mathematical theory of electric and magnetic fields which predicts the propagation of electromagnetic radiation, and is valid for electromagnetic phenomena where effects on an atomic scale can be neglected. { 'mak,swelz i,lek·trō·mag'ned·ik 'thē·ə·rē }

Maxwell-Wagner mechanism [ELEC] A capacitor consisting of two parallel metal plates with two layers of material between them, one with vanishing conductivity, the other with finite conductivity and vanishing electric susceptibility. { 'mak,swel 'wag·nər 'mek·ə,niz·əm }

Maxwell-Wien bridge *See* Maxwell bridge. { 'mak ,swel 'wēn 'brij }

Mbit *See* megabit. { 'em,bit }

Mbyte *See* megabyte. { 'em,bīt }

McCabe's cyclomatic number [COMPUT SCI] The total number of decision statements in a computer program plus one; a measure of the complexity of the program. { mə,kābz ,sī·klə ,mad·ik 'nəm·bər }

McNally tube [ELECTR] Reflex klystron tube, the frequency of which may be electrically controlled over a wide range; used as a local oscillator. { mik'nal·ē ,tüb }

M contour [CONT SYS] A line on a Nyquist diagram connecting points having the same magnitude of the primary feedback ratio. { 'em ,kän·tůr }

MCT *See* MOS-controlled thyristor.

M-derived filter [ELECTR] A filter consisting of a series of T or pi sections whose impedances are matched at all frequencies, even though the sections may have different resonant frequencies. { 'em di,rīvd 'fil·tər }

M-display [ELECTR] A radar display format in which a trace-deflecting pulse can be moved along the range axis of an A-display to assist the operator in determining and reporting the range of a target. Also known as M-indicator; M-scan; M-scope. { 'em di,splā }

MDS *See* minimum discernible signal.

meaconing [ELECTROMAG] A system for receiving electromagnetic signals and rebroadcasting them with the same frequency so as, for instance, to confuse navigation; a confusion reflector, such as chaff, is an example. { 'mē·kə·niŋ }

Mealy machine [COMPUT SCI] A sequential machine in which the output depends on both the current state of the machine and the input. { 'mē·lē mə,shēn }

mean carrier frequency [ELECTR] Average carrier frequency of a transmitter corresponding to the resting frequency in a frequency-modulated system. { 'mēn 'kar·ē·ər ,frē·kwən·sē }

mean power [ELECTR] For a radio transmitter, the power supplied to the antenna transmission line by a transmitter during normal operation, averaged over a time sufficiently long compared with the period of the lowest frequency encountered in the modulation, a time of 1/10 second during which the mean power is greatest will be selected normally. { 'mēn 'paù·ər }

means-ends analysis [COMPUT SCI] A method of problem solving in which the difference between the form of the data in the present and desired situations is determined, and an operator is then found to transform from one into the other, or, if this is not possible, objects between the present and desired objects are created, and the same procedure is then repeated on each of the gaps between them. { 'mēnz 'enz ə,nal·ə·səs }

mean-square-error criterion [CONT SYS] Evaluation of the performance of a control system by calculating the square root of the average over time of the square of the difference between the actual output and the output that is desired. { 'mēn 'skwer 'er·ər krī,tir·ē·ən }

mean time between failures [COMPUT SCI] A measure of the reliability of a computer system, equal to average operating time of equipment between failures, as calculated on a statistical basis from the known failure rates of various components of the system. Abbreviated MTBF. { 'mēn 'tīm bi ,twēn 'fāl·yərz }

measurand transmitter [COMMUN] A telemetry transmitter that transmits a signal modulated according to the values of the quantity being measured. { 'mezh·ə,rand tranz,mid·ər }

measured service [COMMUN] Telephone service for which charge is made according to the measured amount of usage. { 'mezh·ərd 'sər·vəs }

mechanical bearing cursor *See* bearing cursor. { mi'kan·ə·kəl 'ber·iŋ ,kər·sər }

mechanical damping [ENG ACOUS] Mechanical resistance which is generally associated with the moving parts of an electromechanically transducer such as a cutter or a reproducer. { mi'kan·ə·kəl 'damp·iŋ }

mechanical dialer *See* automatic dialer. { mi'kan·ə·kəl 'dī·lər }

mechanical filter [ELECTR] Filter, used in intermediate-frequency amplifiers of highly selective superheterodyne receivers, consisting of shaped metal bars, rods, or disks that act as coupled mechanical resonators when used with piezoelectric or magnetostrictive input and output transducers and coupled by small-diameter wires. Also known as mechanical wave filter. { mi'kan·ə·kəl 'fil·tər }

mechanical jamming *See* passive jamming. { mi'kan·ə·kəl 'jam·iŋ }

mechanical modulator [ELEC] A device that varies a carrier wave by moving some part of a circuit element. { mi'kan·ə·kəl 'mäj·ə,lād·ər }

mechanical oscillograph *See* direct-writing recorder. { mi'kan·ə·kəl ä'sil·ə,graf }

mechanical rectifier [ELEC] A rectifier in which rectification is accomplished by mechanical action, as in a synchronous vibrator. { mi'kan·ə·kəl 'rek·tə,fī·ər }

mechanical replacement [COMPUT SCI] The replacement of one piece of hardware by another piece of hardware at the instigation of the manufacturer. { mi'kan·ə·kəl ri'plās·mənt }

mechanical resistance *See* resistance. { mi'kan·ə·kəl ri'zis·təns }

mechanical scanner [COMPUT SCI] In optical character recognition, a device that projects an input character into a rotating disk, on the periphery of which is a series of small, uniformly spaced apertures; as the disk rotates, a photocell collects the light passing through the apertures. { mi'kan·ə·kəl 'skan·ər }

mechanical stepping motor [ELEC] A device in which a voltage pulse through a solenoid coil causes reciprocating motion by a solenoid plunger, and this is transformed into rotary motion through a definite angle by ratchet-and-pawl mechanisms or other mechanical linkages. { mi'kan·ə·kəl 'step·iŋ ,mōd·ər }

mechanical tilt [ELECTR] **1.** Vertical tilt of the mechanical axis of a radar antenna. **2.** The angle indicated by the tilt indicator dial. { mi'kan·ə·kəl 'tilt }

mechanical translation [COMPUT SCI] Automatic translation of one language into another by means of a computer or other machine that contains a dictionary look-up in its memory, along with the programs needed to make logical choices from synonyms, supply missing words, and rearrange word order as required for the new language. Also known as machine translation. { mi'kan·ə·kəl tranz'lā·shən }

mechanical wave filter *See* mechanical filter. { mi'kan·ə·kəl 'wāv ,fil·tər }

mechanized *See* machine-sensible. { 'mek·ə ,nīzd }

mechatronics [ENG] A branch of engineering that incorporates the ideas of mechanical and electronic engineering into a whole, and, in particular, covers those areas of engineering concerned with the increasing integration of mechanical, electronic, and software engineering into a production process. { ,mek·ə'trän·iks }

media conversion [COMPUT SCI] The transfer of data from one storage type (such as magnetic tape) to another storage type (such as magnetic or optical disk). { 'mē·dē·ə kən,vər·zhən }

media conversion buffer [COMPUT SCI] Large storage area, such as a drum, on which data may be stored at low speed during nonexecution time, to be later transferred at high speed into core memory during execution time. { 'mē·dē·ə kən ,vər·zhən ,bəf·ər }

medical electronics [ELECTR] A branch of electronics in which electronic instruments and equipment are used for such medical applications as diagnosis, therapy, research, anesthesia control, cardiac control, and surgery. { 'med·ə·kəl i,lek'trän·iks }

medical frequency bands [COMMUN] A collection of radio frequency bands allocated to medical equipment in the United States. { 'med·ə·kəl 'frē·kwən·sē ,banz }

medium [COMPUT SCI] The material, or configuration thereof, on which data are recorded; usually applied to storable, removable media, such as disks and magnetic tape. { 'mē·dē·əm }

medium frequency [COMMUN] A Federal Communications Commission designation for the band from 300 to 3000 kilohertz in the radio spectrum. Abbreviated MF. { 'mē·dē·əm 'frē·kwən·sē }

medium-frequency propagation [COMMUN] Radio propagation at broadcast frequencies where skip is not an important factor. { 'mē·dē·əm ¦frē·kwən·sē ,präp·ə'gā·shən }

medium-frequency tube [ELECTR] An electron tube operated at frequencies between 300 and 3000 kilohertz, at which the transit time of an electron between electrodes is much smaller than the period of oscillation of the voltage. { 'mē·dē·əm ¦frē·kwən·sē ,tüb }

medium-scale integration [ELECTR] Fabrication of solid-state integrated circuits having more than about 12 gate-equivalent circuits. Abbreviated MSI. { 'mē·dē·əm ¦skāl ,int·ə'grā·shən }

medium-technology robot [CONT SYS] An automatically controlled machine that employs servomechanisms and microprocessor control units. { 'mē·dē·əm tek¦näl·ə·jē 'rō,bät }

megabit [COMPUT SCI] A unit of information content equal to 1,048,576 (1024 × 1024) bits. Abbreviated Mbit. { 'meg·ə,bit }

megabyte [COMPUT SCI] A unit of information content equal to 1,048,576 (1024 × 1024) bytes. Abbreviated Mbyte. Symbolized M. { 'meg·ə ,bīt }

megaflops [COMPUT SCI] A unit of computer speed, equal to 10^6 flops. { 'meg·ə,fläps }

megapel display [COMPUT SCI] A computer graphics display that handles 10^6 or more pixels (pels). { 'meg·ə,pel di,splā }

megatron *See* disk-seal tube. { 'meg·ə,trän }

megavolt [ELEC] A unit of potential difference or emf (electromotive force), equal to 1,000,000 volts. Abbreviated MV. { 'meg·ə,vōlt }

megawatt year of electricity [ELEC] A unit of electric energy, equal to the energy from a power of 1,000,000 watts over a period of 1 tropical year, or to 3.1557×10^{13} joules. Abbreviated MWYE. { 'meg·ə,wät ¦yir əv i,lek'tris·əd·ē }

megohm [ELEC] A unit of resistance, equal to 1,000,000 ohms. { 'me,gōm }

megohmmeter [ELEC] An instrument which is used for measuring the high resistance of electrical materials of the order of 20,000 megohms at 1000 volts; one direct-reading type employs a permanent magnet and a moving coil. { 'me ,gōmē,mēd·ər }

Meissner oscillator [ELECTR] An electron-tube oscillator in which the grid and plate circuits are inductively coupled through an independent tank circuit which determines the frequency. { 'mīs·nər ˌäs·əˌlād·ər }

melodeon [ELECTR] Broadband panoramic receiver used for countermeasures reception; all types of received electromagnetic radiation are presented as vertical pips on a frequency-calibrated cathode-ray indicator screen. { mə'lōd·ē·ən }

meltback transistor [ELECTR] A junction transistor in which the junction is made by melting a properly doped semiconductor and allowing it to solidify again. { 'melt'back tran'zist·ər }

membrane keyboard [COMPUT SCI] A flat keyboard, used with microcomputers and hand-held calculators, that consists of two closely spaced membranes separated by a flat sheet called a spacer with holes corresponding to the keys. { 'mem,brān 'kēˌbȯrd }

memex [COMPUT SCI] A hypothetical machine described by Vannevar Bush, which would store written records so that they would be available almost instantly by merely pushing the right button for the information desired. { 'me,meks }

memistor [ELEC] Nonmagnetic memory device consisting of a resistive substrate in an electrolyte; when used in an adaptive system, a direct-current signal removes copper from an anode and deposits it on the substrate, thus lowering the resistance of the substrate; reversal of the current reverses the process, raising the resistance of the substrate. { me'mis·tər }

memory [COMPUT SCI] Any apparatus in which data may be stored and from which the same data may be retrieved; especially, the internal, high-speed, large-capacity working storage of a computer, as opposed to external devices. Also known as computer memory. { 'mem·rē }

memory address register [COMPUT SCI] A special register containing the address of a word currently required. { 'mem·rē 'adˌres ˌrej·ə·stər }

memory bank [COMPUT SCI] A physical section of a computer memory, which may be designed to handle information transfers independently of other such transfers in other such sections. { 'mem·rē ˌbaŋk }

memory buffer register [COMPUT SCI] A special register in which a word is stored as it is read from memory or just prior to being written into memory. { 'mem·rē 'bəf·ər ˌrej·ə·stər }

memory capacity *See* storage capacity. { 'mem·rē kə'pas·əd·ē }

memory card [COMPUT SCI] A small card, typically with dimensions of about 2 × 3 inches (5 × 8 centimeters), that can store information, usually in integrated circuits or magnetic strips. { 'mem·rē ˌkärd }

memory cell [COMPUT SCI] A single storage element of a memory, together with associated circuits for storing and reading out one bit of information. { 'mem·rē ˌsel }

memory chip *See* semiconductor memory. { 'mem·rē ˌchip }

memory contention [COMPUT SCI] A situation in which two different programs, or two parts of a program, try to read items in the same block of memory at the same time. { 'mem·rē kən'ten·chən }

memory core *See* magnetic core. { 'mem·rē ˌkȯr }

memory cycle *See* cycle time. { 'mem·rē ˌsī·kəl }

memory dump *See* storage dump. { 'mem·rē ˌdəmp }

memory dump routine [COMPUT SCI] A debugging routine which produces a listing of a consecutive section of memory, either numbers or instructions, at selected points in a program. { 'mem·rē ˌdəmp rü,tēn }

memory element [COMPUT SCI] Any component part of core memory. { 'mem·rē ˌel·ə·mənt }

memory expansion card [COMPUT SCI] A printed circuit board that contains additional storage and can be plugged into a computer to increase its storage capacity. { 'mem·rē ik'span·chən ˌkärd }

memory fill *See* storage fill. { 'mem·rē ˌfil }

memory gap [COMPUT SCI] A gulf in access time, capacity, and cost of computer storage technologies between fast, expensive, main-storage devices and slow, high-capacity, inexpensive secondary-storage devices. Also known as access gap. { 'mem·rē ˌgap }

memory guard [COMPUT SCI] Built-in safety devices which prevent a program or a programmer from accessing certain memory areas reserved for the central processor. Also known as memory protect. { 'mem·rē ˌgärd }

memory hierarchy [COMPUT SCI] A ranking of computer memory devices, with devices having the fastest access time at the top of the hierarchy, and devices with slower access times but larger capacity and lower cost at lower levels. { 'mem·rē 'hī·ərˌär·kē }

memory lockout register [COMPUT SCI] A special register containing the limiting addresses of an area in memory which may not be accessed by the program. { 'mem·rē 'läkˌaůt ˌrej·ə·stər }

memory management [COMPUT SCI] **1.** The allocation of computer storage in a multiprogramming system so as to maximize processing efficiency. **2.** The collection of routines for placing, fetching, and removing pages or segments into or out of the main memory of a computer system. { 'mem·rē ˌman·ij·mənt }

memory map [COMPUT SCI] The list of variables, constants, identifiers, and their memory locations when a FORTRAN program is being run. Also known as memory map list. { 'mem·rē ˌmap }

memory map list *See* memory map. { 'mem·rē ˌmap ˌlist }

memory mapping [COMPUT SCI] The method by which a computer translates between its logical address space and its physical address space. { 'mem·rē ˌmap·iŋ }

memory overlay [COMPUT SCI] The efficient use of memory space by allowing for repeated use of the same areas of internal storage during the different stages of a program; for instance, when a subroutine is no longer required, another routine can replace all or part of it. { 'mem·rē 'ō·vərˌlā }

memory port [COMPUT SCI] A logical connection through which data are transferred in or out of main memory under control of the central processing unit. { 'mem·rē ˌpȯrt }

memory power [COMPUT SCI] A relative characteristic pertaining to differences in access time speeds in different parts of memory; for instance, access time from the buffer may be a tenth of the access time from core. { 'mem·rē ˌpaù·ər }

memory print *See* storage dump. { 'mem·rē ˌprint }

memory printout [COMPUT SCI] A listing of the contents of memory. { 'mem·rē 'printˌaůt }

memory protect *See* memory guard. { 'mem·rē prəˌtekt }

memory protection *See* storage protection. { 'mem·rē prə'tek·shən }

memory-reference instruction [COMPUT SCI] A type of instruction usually requiring two machine cycles, one to fetch the instruction, the other to fetch the data at an address (part of the instruction itself) and to execute the instruction. { 'mem·rē ¦ref·rəns inˌstrək·shən }

memory register *See* storage register. { 'mem·rē ˌrej·ə·stər }

memory search routine [COMPUT SCI] A debugging routine which has as an essential feature the scanning of memory in order to locate specified instructions. { 'mem·rē 'sərch rüˌtēn }

memory-segmentation control [COMPUT SCI] Address-computing logic to address words in memory with dynamic allocation and protection of memory segments assigned to different users. { 'mem·rē ˌseg·mən'tā·shən kənˌtrōl }

memory sniffer [COMPUT SCI] A diagnostic routine that continually tests the computer memory while the machine is in operation. { 'mem·rē ˌsnif·ər }

memory storage [COMPUT SCI] The sum total of the computer's storage facilities, that is, core, drum, disk, cards, and paper tape. { 'mem·rē ˌstȯr·ij }

memory switch *See* ovonic memory switch. { 'mem·rē ˌswich }

memory tube *See* storage tube. { 'mem·rē ˌtüb }

memory typewriter *See* electronic typewriter. { 'mem·rē ˌtīp·rīd·ər }

memotron [ELECTR] An electrical-visual storage tube which is capable of bistable visual-signal display, controllable in duration from a few milliseconds to infinity, and which is suited to specialized oscillography. { 'mem·əˌträn }

MEMS *See* micro-electro-mechanical system. { memz *or* ¦em¦ē¦em'es }

MEMS microphone [ENG ACOUS] A very small microphone, generally less than 1 millimeter, that can be incorporated directly onto an electronic chip and commonly uses a small thin membrane fabricated on the chip to detect sound. { ¦memz *or* ¦em¦ē¦em¦es 'mī·krəˌfōn }

menu [COMPUT SCI] A list of computer functions appearing on a video display terminal which indicates the possible operations that a computer can perform next, only one of which can be selected by the operator. { 'men·yü }

menu bar [COMPUT SCI] **1.** In a graphical user Interface, a horizontal strip near the top of the screen or a window, containing the titles of available pull-down menus. **2.** A horizontal or vertical strip containing the names of currently available commands. { 'men·yü ˌbär }

menu-driven system [COMPUT SCI] An interactive computer system in which the operator requests the processing to be performed by making selections from a series of menus. { 'men·yü ¦driv·ən 'sis·təm }

mercury arc [ELECTR] An electric discharge through ionized mercury vapor, giving off a brilliant bluish-green light containing strong ultraviolet radiation. { 'mər·kyə·rē 'ärk }

mercury-arc rectifier [ELECTR] A gas-filled rectifier tube in which the gas is mercury vapor; small sizes use a heated cathode, while larger sizes rated up to 8000 kilowatts and higher use a mercury-pool cathode. Also known as mercury rectifier; mercury-vapor rectifier. { 'mər·kyə·rē ¦ärk 'rek·təˌfī·ər }

mercury cell [ELEC] A primary dry cell that delivers an essentially constant output voltage throughout its useful life by means of a chemical reaction between zinc and mercury oxide; widely used in hearing aids. Also known as mercury oxide cell. { 'mər·kyə·rē ˌsel }

mercury delay line [ELECTR] An acoustic delay line in which mercury is the medium for sound transmission. Also known as mercury memory; mercury storage. { 'mər·kyə·rē di'lā ˌlīn }

mercury lamp *See* mercury-vapor lamp. { 'mər·kyə·rē ˌlamp }

mercury memory *See* mercury delay line. { 'mər·kyə·rē 'mem·rē }

mercury oxide cell *See* mercury cell. { 'mər·kyə·rē ¦äkˌsīd ˌsel }

mercury-pool cathode [ELECTR] A cathode of a gas tube consisting of a pool of mercury; an arc spot on the pool emits electrons. { 'mər·kyə·rē ˌpül 'kathˌōd }

mercury-pool rectifier *See* pool-cathode mercury-arc rectifier. { 'mər·kyə·rē ˌpül 'rek·təˌfī·ər }

mercury storage *See* mercury delay line. { 'mər·kyə·rē 'stȯr·ij }

mercury switch [ELEC] A switch that is closed by making a large globule of mercury move up to the contacts and bridge them; the mercury is usually moved by tilting the entire switch. { 'mər·kyə·rē ˌswich }

mercury tank [ELECTR] A container of mercury, with pairs of transducers at opposite ends, used in a mercury delay line. { 'mər·kyə·rē ˌtaŋk }

mercury tube *See* mercury-vapor tube; pool tube. { 'mər·kyə·rē ˌtüb }

mercury-vapor lamp [ELECTR] A lamp in which light is produced by an electric arc between two electrodes in an ionized mercury-vapor atmosphere; it gives off a bluish-green light rich in ultraviolet radiation. Also known as mercury lamp. { 'mər·kyə·rē ¦vā·pər ˌlamp }

mercury-vapor rectifier *See* mercury-arc rectifier. { 'mər·kyə·rē ¦vā·pər 'rek·təˌfī·ər }

mercury-vapor tube [ELECTR] A gas tube in which the active gas is mercury vapor. Also known as mercury tube. { 'mər·kyə·rē ¦vā·pər ,tüb }

mercury-wetted reed switch [ELEC] A reed switch containing a pool of mercury at one end and normally operated vertically; the contacts on the reeds are covered with a mercury film by capillary action; each operation of the switch renews this mercury film contact, thereby increasing the operating life of the switch many times. { 'mər·kyə·rē ¦wed·əd 'rēd ,swich }

merge [COMPUT SCI] To create an ordered set of data by combining properly the contents of two or more sets of data, each originally ordered in the same manner as the output data set. Also known as mesh. { mərj }

merged-transistor logic *See* integrated injection logic. { ¦mərjd tran¦zis·tər 'läj·ik }

merge search [COMPUT SCI] A procedure for searching a table in which both the table and file records must first be ordered in the same sequence on the key involved, and the table is searched sequentially until a table-record key equal to or greater than the file-record key is found, upon which the file record is processed if its key is equal, and the process is repeated with the next file record, starting at the table position where the previous search terminated. { 'mərj ,sərch }

merge sort [COMPUT SCI] To produce a single sequence of items ordered according to some rule, from two or more previously ordered or unordered sequences, without changing the items in size, structure, or total number; although more than one pass may be required for a complete sort, items are selected during each pass on the basis of the entire key. { 'mərj ,sȯrt }

merging routine [COMPUT SCI] A program that creates a single sequence of items, ordered according to some rule, out of two or more sequences of items, each sequence ordered according to the same rule. { 'mərj·iŋ rü,tēn }

merit [ELECTR] A performance rating that governs the choice of a device for a particular application; it must be qualified to indicate type of rating, as in gain-bandwidth merit or signal-to-noise merit. { 'mer·ət }

mesa device [ELECTR] Any device produced by diffusing the surface of a germanium or silicon wafer and then etching down all but selected areas, which then appear as physical plateaus or mesas. { 'mā·sə di,vīs }

mesa diode [ELECTR] A diode produced by diffusing the entire surface of a large germanium or silicon wafer and then delineating the individual diode areas by a photoresist-controlled etch that removes the entire diffused area except the island or mesa at each junction site. { 'mā·sə ,dī,ōd }

mesa transistor [ELECTR] A transistor in which a germanium or silicon wafer is etched down in steps so the base and emitter regions appear as physical plateaus above the collector region. { 'mā·sə tran'zis·tər }

MESFET *See* metal semiconductor field-effect transistor. { 'mes,fet }

mesh [COMPUT SCI] *See* merge. [ELEC] A set of branches forming a closed path in a network so that if any one branch is omitted from the set, the remaining branches of the set do not form a closed path. Also known as loop. { mesh }

mesh analysis [ELEC] A method of electrical circuit analysis in which the mesh currents are taken as independent variables and the potential differences around a mesh are equated to 0. { 'mesh ə'nal·ə·səs }

mesh connection *See* delta connection. { 'mesh kə,nek·shən }

mesh currents [ELEC] The currents which are considered to circulate around the meshes of an electric network, so that the current in any branch of the network is the algebraic sum of the mesh currents of the meshes to which that branch belongs. Also known as cyclic currents; Maxwell's cyclic currents. { 'mesh kə·rənts }

mesh impedance [ELEC] The ratio of the voltage to the current in a mesh when all other meshes are open. Also known as self-impedance. { 'mesh im'pēd·əns }

mesh network [COMMUN] A communications network in which each node has at least two links to other nodes. { 'mesh ,net,wərk }

mesomerism *See* resonance. { mə'säm·ə,riz·əm }

message [COMMUN] A series of words or symbols, transmitted with the intention of conveying information. [COMPUT SCI] An arbitrary amount of information with beginning and end defined or implied; usually, it originates in one place and is intended to be transmitted to another place. { 'mes·ij }

message accounting [COMMUN] Use of equipment to make records of telephone calls for billing purposes. { 'mes·ij ə,kaùnt·iŋ }

message authentication [COMMUN] Security measure designed to establish the authenticity of a message by means of an authenticator within the transmission derived from certain predetermined elements of the message itself. { 'mes·ij ȯ,then·tə'kā·shən }

message authentication code [COMPUT SCI] The encrypted personal identification code appended to the message transmitted to a computer; the message is accepted only if the decrypted code is recognized as valid by the computer. Abbreviated MAC. { 'mes·ij ȯ,then·tə'kā·shən ,kōd }

message blocking [COMMUN] The division of messages into blocks having a fixed number of bytes in order to provide consistent work units and thereby simplify the design of data communications networks. { 'mes·ij ,bläk·iŋ }

message buffer [COMPUT SCI] One of a number of sections of computer memory, which contains a message that can be transmitted between tasks in the computer system to request service and receive replies from tasks, and which is stored in a system buffer area, outside the address spaces of tasks. { 'mes·ij ,bəf·ər }

message center [COMMUN] A communications facility charged with the responsibility for acceptance, preparation for transmission,

transmission, receipt and delivery of messages. { 'mes·ij ,sen·tər }

message display console [COMPUT SCI] A cathode-ray tube on which is displayed information requested by the user. { 'mes·ij di'splā ,kän,sōl }

message exchange [COMPUT SCI] A device which acts as a buffer between a communication line and a computer and carries out communication functions. { 'mes·ij iks,chānj }

message indicator [COMMUN] Element placed within a message to serve as a guide to the selection or derivation and application of the correct key to facilitate the prompt decryption of the message. { 'mes·ij ,in·də'kād·ər }

message interpolation [COMMUN] Data message insertion during intersyllable periods or speech pauses on a busy voice channel without breaking down the voice connection or noticeably affecting the voice transmission. { 'mes·ij in ,tər·pə'lā·shən }

message keying element [COMMUN] That part of the key which changes with every message. { 'mes·ij 'kē·iŋ ,el·ə·mənt }

message-oriented applications [COMMUN] Applications of data communications that involve medium-size data transfers in the range of hundreds to a few thousand bytes or characters, and are usually unidirectional information flows from source to destination. { 'mes·ij ¦ōr·ē,ent·əd ,ap·lə'kā·shənz }

message queuing [COMPUT SCI] The stacking of messages according to some priority rule as the messages await processing. { 'mes·ij ,kyü·iŋ }

message reference block [COMMUN] A set of signals denoting the beginning or end of a message. { 'mes·ij 'ref·rəns ,blāk }

message registration [COMMUN] A method for counting the number of completed charged calls which originate from a particular telephone line, making one scoring for each local call and more than one scoring for calls between zones. { 'mes·ij ,rej·ə,strā·shən }

message routing [COMMUN] Selection of the communication path over which a message is sent. { 'mes·ij ,rüd·iŋ }

message switching [COMMUN] A system in which data transmitted between stations on different circuits within a network are routed through central points. { 'mes·ij ,swich·iŋ }

message trailer [COMMUN] The last part of a data communications message that signals the end of the message and may also contain control information such as a check character. { 'mes·ij ,trā·lər }

messaging [COMMUN] Electronic communication in which a message is sent directly to its destination without being stored en route. { 'mes·ij·iŋ }

meta character [COMPUT SCI] A character in a computer programming language system that has some controlling role with respect to other characters with which it may be associated. { 'med·ə ,kar·ik·tər }

metacompiler [COMPUT SCI] A compiler that is used chiefly to construct compilers for other programming languages. { 'med·ə kəm ,pī·lər }

metadata [COMPUT SCI] A description of the data in a source, distinct from the actual data, for example, the currency by which prices are measured in a data source for purchasing goods. { 'med·ə,dad·ə }

metadyne [ELECTR] A type of rotating magnetic amplifier having more than one brush per pole, used for voltage regulation or transformation. { 'med·ə,dīn }

metal-air battery *See* air-depolarized battery. { 'med·əl ¦er 'bad·ə·rē }

metalanguage [COMPUT SCI] A programming language that uses symbols to represent the syntax of other programming languages, and is used chiefly to write compilers for those languages. { 'med·ə,laŋ·gwij }

metal antenna [ELECTROMAG] An antenna which has a relatively small metal surface, in contrast to a slot antenna. { 'med·əl an'ten·ə }

metal-clad substation [ELEC] An electric power substation housed in a metal cabinet, either indoors or outdoors. { 'med·əl ¦klad 'səb ,stā·shən }

metal detector [ELECTR] An electronic device for detecting concealed metal objects, such as guns, knives, or buried pipelines, generally by radiating a high-frequency electromagnetic field and detecting the change produced in that field by the ferrous or nonferrous metal object being sought. Also known as electronic locator; metal locator; radio metal locator. { 'med·əl di,tek·tər }

metal-film resistor [ELEC] A resistor in which the resistive element is a thin film of metal or alloy, deposited on an insulating substrate of an integrated circuit. { 'med·əl ¦film ri'zis·tər }

metal halide lamp [ELECTR] A discharge lamp in which metal halide salts are added to the contents of a discharge tube in which there is a high-pressure arc in mercury vapor; the added metals generate different wavelengths, to give substantially white light at an efficiency approximating that of high-pressure sodium lamps. { 'med·əl 'ha,līd ,lamp }

metal-in-gap head [ELECTR] A ring head in which the gap in the ring is lined with a metallic material having a higher saturation magnetization in order to extend the maximum field of the head. Abbreviated MIG head. { ,med·əl in ,gap 'hed }

metal-insulator semiconductor [SOLID STATE] Semiconductor construction in which an insulating layer, generally a fraction of a micrometer thick, is deposited on the semiconducting substrate before the pattern of metal contacts is applied. Abbreviated MIS. { 'med·əl ¦in·sə ,lād·ər 'sem·i·kən¦dək·tər }

metallic circuit [ELEC] Wire circuit of which the ground or earth forms no part. { mə'tal·ik 'sər·kət }

metallic disk rectifier *See* metallic rectifier. { mə'tal·ik ¦disk 'rek·tə,fī·ər }

metallic electrode arc lamp [ELEC] A type of arc lamp in which light is produced by luminescent vapor introduced into the arc by evaporation

from the cathode; the anode is solid copper, and the cathode is formed of magnetic iron oxide with titanium as the light-producing element and other chemicals to control steadiness and vaporization. { mə'tal·ik ˌlek,trōd ärk ˌlamp }

metallic insulator [ELECTROMAG] Section of transmission line used as a mechanical support device; the section is an odd number of quarter-wavelengths long at the frequency of interest, and the input impedance becomes high enough so that the section effectively acts as an insulator. { mə'tal·ik 'in·səˌlād·ər }

metallic rectifier [ELECTR] A rectifier consisting of one or more disks of metal under pressure-contact with semiconductor coatings or layers, such as a copper oxide, selenium, or silicon rectifier. Also known as contact rectifier; dry-disk rectifier; dry-plate rectifier; metallic-disk rectifier; semiconductor rectifier. { mə'tal·ik 'rek·təˌfī·ər }

metallized capacitor [ELEC] A capacitor in which a film of metal is deposited directly on the dielectric to serve in place of a separate foil strip; has self-healing characteristics. { 'med·əlˌīzd kə'pas·əd·ər }

metallized-paper capacitor [ELEC] A modification of a paper capacitor in which metal foils are replaced by extremely thin films of metal deposited on the paper; if a breakdown occurs, these films burn away in the area of the breakdown. { 'med·əlˌīzd ˌpāp·ər kə'pas·əd·ər }

metallized resistor [ELEC] A resistor made by depositing a thin film of high-resistance metal on the surface of a glass or ceramic rod or tube. { 'med·əlˌīzd ri'zis·tər }

metal locator *See* metal detector. { 'med·əl ˌlō ˌkād·ər }

metal-nitride-oxide semiconductor [SOLID STATE] A semiconductor structure that has a double insulating layer; typically, a layer of silicon dioxide (SiO_2) is nearest the silicon substrate, with a layer of silicon nitride (Si_3N_4) over it. Abbreviated MNOS. { 'med·əl ˌnī,trīd ˌäk,sīd 'sem·i·kənˌdək·tər }

metal oxide resistor [ELEC] A metal-film resistor in which an oxide of a metal such as tin is deposited as a film onto an insulating substrate. { 'med·əl ˌäk,sīd ri'zis·tər }

metal oxide semiconductor [SOLID STATE] A metal insulator semiconductor structure in which the insulating layer is an oxide of the substrate material; for a silicon substrate, the insulating layer is silicon dioxide (SiO_2). Abreviated MOS. { 'med·əl ˌäk,sīd 'sem·i·kənˌdək·tər }

metal oxide semiconductor field-effect transistor [ELECTR] A field-effect transistor having a gate that is insulated from the semiconductor substrate by a thin layer of silicon dioxide. Abbreviated MOSFET; MOST; MOS transistor. Formerly known as insulated-gate field-effect transistor (IGFET). { 'med·əl ˌäk,sīd 'sem·i·kənˌdək·tər 'fēld iˌfekt tran'zis·tər }

metal oxide semiconductor integrated circuit [ELECTR] An integrated circuit using metal oxide semiconductor transistors; it can have a higher density of equivalent parts than a bipolar integrated circuit. { 'med·əl ˌäk,sīd 'sem·i·kənˌdək·tər 'int·əˌgrād·əd 'sər·kət }

metal semiconductor field-effect transistor [ELECTR] A field-effect transistor that uses a thin film of gallium arsenide, with a Schottky barrier gate formed by depositing a layer of metal directly onto the surface of the film. Abbreviated MESFET. { 'med·əl 'sem·i·kənˌdək·tər 'fēld iˌfekt tran'zis·tər }

metascope [ELECTR] An infrared receiver used for converting pulsed invisible infrared rays into visible signals for communication purposes; also used with an infrared source for reading maps in darkness. { 'med·əˌskōp }

metavariable [COMPUT SCI] One of the elements of a formal language, corresponding to the parts of speech of a natural language. Also known as component name; phrase name. { ˌmed·ə'ver·ē·ə·bəl }

meteoric scatter [COMMUN] A form of scatter propagation in which meteor trails serve to scatter radio waves back to earth. { ˌmēd·ē'ȯr·ik 'skad·ər }

meteorological frequency bands [COMMUN] A collection of radio and microwave frequency bands allocated for use by radiosondes and ground-based radars used in weather forecasting in the United States. { ˌmed·ē·ə·rə'läj·ə·kəl 'frē·kwən·sē ˌbanz }

meter [ENG] A device for measuring the value of a quantity under observation; the term is usually applied to an indicating instrument alone. { 'mēd·ər }

meter bridge [ELEC] A uniform resistance wire 1 meter in length, mounted above a scale marked in millimeters, with terminals added to make the device usable as either part of a Wheatstone bridge or of a potentiometer. { 'mēd·ər ˌbrij }

meter sensitivity [ENG] The accuracy with which a meter can measure a voltage, current, resistance, or other quantity. { 'mēd·ər ˌsen·sə'tiv·əd·ē }

meter-type relay [ELEC] A relay that uses a meter movement having a contact-bearing pointer which moves toward or away from a fixed contact mounted on the meter scale. { 'mēd·ər ˌtīp ˌrē·lā }

method of images [ELEC] In electrostatics, a method of determining the electric fields and potentials set up by charges in the vicinity of a conductor, in which the conductor and its induced surface charges are replaced by one or more fictitious charges. { 'meth·əd əv 'im·ij·əz }

metric waves [ELECTROMAG] Radio waves having wavelengths between 1 and 10 meters, corresponding to frequencies between 30 and 300 megahertz (the very-high-frequency band). { 'me·trik 'wāvz }

mF *See* millifarad.

MF *See* medium frequency.

Mflop *See* million floating-point operations per second. { 'em,fläp }

MFSK *See* multiple-frequency-shift keying.

MHD generator *See* magnetohydrodynamic generator. { ¦em¦āch'dē 'jen·ə,rād·ər }

mho *See* siemens. { mō }

MIC *See* microwave integrated circuit.

mica capacitor [ELEC] A capacitor whose dielectric consists of thin rectangular sheets of mica and whose electrodes are either thin sheets of metal foil stacked alternately with mica sheets, or thin deposits of silver applied to one surface of each mica sheet. { 'mī·kə kə'pas·əd·ər }

mickey-mouse [COMPUT SCI] To play with something new, such as hardware, software, or a system, until a feel is gotten for it and the proper operating procedure is discovered, understood, and mastered. { ¦mik·ē 'maús }

MICR *See* magnetic-ink character recognition.

microactuator [ENG] A very small actuator, with physical dimensions in the submicrometer to millimeter range, generally batch-fabricated from silicon wafers. { ,mī·krō'ak·chə,wād·ər }

microalloy diffused transistor [ELECTR] A microalloy transistor in which the semiconductor wafer is first subjected to gaseous diffusion to produce a nonuniform base region. Abbreviated MADT. { ¦mī·krō'al,ȯi də'fyüzd tran'zis·tər }

microalloy transistor [ELECTR] A transistor in which the emitter and collector electrodes are formed by etching depressions, then electroplating and alloying a thin film of the impurity metal to the semiconductor wafer, somewhat as in a surface-barrier transistor. { ¦mī·krō'al,ȯi tran 'zis·tər }

microammeter [ELEC] An ammeter whose scale is calibrated to indicate current values in microamperes. { ¦mī·krō'a,mēd·ər }

microampere [ELEC] A unit of current equal to one-millionth of an ampere. Abbreviated μA. { ¦mī·krō'am,pir }

microcapacitor [ELECTR] Any very small capacitor used in microelectronics, usually consisting of a thin film of dielectric material sandwiched between electrodes. { ¦mī·krō·kə'pas·əd·ər }

microchannel plate [ELECTR] A plate that consists of extremely small cylinder-shaped electron multipliers mounted side by side, to provide image intensification factors as high as 100,000. Also known as channel plate multiplier. { ¦mī·krō¦chan·əl 'plāt }

microchip *See* chip. { 'mī·krō,chip }

microcircuitry [ELECTR] Electronic circuit structures that are orders of magnitude smaller and lighter than circuit structures produced by the most compact combinations of discrete components. Also known as microelectronic circuitry, microminiature circuitry. { ¦mī·krō'sər·kə·trē }

microcode [COMPUT SCI] A code that employs microinstructions; not ordinarily used in programming. { 'mī·krō,kōd }

microcomputer [COMPUT SCI] **1.** A digital computer whose central processing unit resides on a single semiconductor integrated circuit chip, a microprocessor. **2.** An electronic device typically consisting of a microprocessor central processing unit, semiconductor memory (RAM), graphics display, and keyboard. Typical configurations also include a hard disk for persistent memory, a compact disk drive, a disk drive which allows removable disks to be used to move data in and out of the machine, and a pointing device. { ¦mī·krō·kəm'pyüd·ər }

microcomputer development system [COMPUT SCI] A complete microcomputer system that is used to test both the software and hardware of other microcomputer-based systems. { ¦mī·krō·kəm'pyüd·ər di'vel·əp·mənt ,sis·təm }

microcontroller [ELECTR] A microcomputer, microprocessor, or other equipment used for precise process control in data handling, communication, and manufacturing. { ¦mī·krō·kən'trōl·ər }

microcoulomb [ELEC] A unit of electric charge equal to one-millionth of a coulomb. Abbreviated μC. { ¦mī·krō'kü,läm }

microdiagnostic program [COMPUT SCI] A microprogram that tests a specific hardware component, such as a bus or store location, for faults. { ¦mī·krō,dī·əg'näs·tik 'prō·grəm }

microdisk [COMPUT SCI] A small floppy disk with a diameter between 3 and 4 inches (7 and 10 centimeters). Also known as microfloppy disk. { 'mī·krō,disk }

micro-electro-mechanical system [ENG] A system in which micromechanisms are coupled with microelectronics, most commonly fabricated as microsensors or microactuators. Abbreviated MEMS. Also known as microsystem. { ¦mī·krō ,lek·trə·mə'kan·ə·kəl ,sis·təm }

microelectronic circuitry *See* microcircuitry. { ¦mī·krō·i,lek'trän·ik 'sər·kə·trē }

microelectronics [ELECTR] The technology of constructing circuits and devices in extremely small packages by various techniques. Also known as miniaturization; microsystem electronics. { ¦mī·krō·i,lek'trän·iks }

microelement [ELECTR] Resistor, capacitor, transistor, diode, inductor, transformer, or other electronic element or combination of elements mounted on a ceramic wafer 0.025 centimeter thick and about 0.75 centimeter square; individual microelements are stacked, interconnected

and potted to form micromodules. [ENG] An element of a work cycle whose time span is too short to be observed by the unaided eye. { ¦mī·krō'el·ə·mənt }

microfabrication [ENG] The technology of fabricating microsystems from silicon wafers, using standard semiconductor process technologies in combination with specially developed processes. { ¦mī·krō,fab·rə'kā·shən }

microfarad [ELEC] A unit of capacitance equal to one-millionth of a farad. Abbreviated μF. { ¦mī·krō'far·əd }

microfloppy disk *See* microdisk. { ¦mī·krō,fläp·ē ,disk }

microhm [ELEC] A unit of resistance, reactance, and impedance, equal to 10^{-6} ohm. { 'mī·krōm }

microimage [COMPUT SCI] A single image stored on a microform medium. { 'mī·krō,im·ij }

microinstruction [COMPUT SCI] The portion of a microprogram that specifies the operation of individual computing elements and such related subunits as the main memory and the input/output interfaces; usually includes a next-address field that eliminates the need for a program counter. { ¦mī·krō·in'strək·shən }

microlock [ELECTR] **1.** Satellite telemetry system that uses phase-lock techniques in the ground receiving equipment to achieve extreme sensitivity. **2.** A lock by a tracking station upon a minitrack radio transmitter. **3.** The system by which this lock is effected. { 'mī·krə,läk }

micromainframe [COMPUT SCI] A main frame of a computer placed on one or more integrated circuit chips. { ¦mī·krō'mān,frām }

micromechanical display [ENG] A video display based on an array of mirrors on a silicon chip that can be deflected by electrostatic forces. Abbreviated MMD. { ,mī·krō·mə,kan·i·kəl di'splā }

micromechanics [ENG] **1.** The design and fabrication of micromechanisms. **2.** *See* composite micromechanics. { ¦mī·krō·mə'kan·iks }

micromechatronics [ENG] The branch of engineering concerned with micro-electro-mechanical systems. { ¦mī·kro,mek·ə'trän·iks }

microminiature circuitry *See* microcircuitry. { ¦mī·krō¦min·ə·char 'sər·kə·trē }

microminiaturization *See* microelectronics. { ¦mī·krō,min·ə·chə·rə'zā·shən }

micromodule [ELECTR] Cube-shaped, plug-in, miniature circuit composed of potted microelements; each microelement can consist of a resistor, capacitor, transistor, or other element, or a combination of elements. { ¦mī·krō¦äj·ül }

microoperation [COMPUT SCI] Any clock-timed step of an operation. { ¦mī·krō,äp·ə'rā·shən }

micro-opto-electro-mechanical system [ENG] A microsystem that combines the functions of optical, mechanical, and electronic components in a single, very small package or assembly. Abbreviated MOEMS. { ¦mī·kro¦äp·tō i¦lek·trō mə¦kan·ə·kəl 'sis·təm }

micro-opto-mechanical system [ENG] A microsystem that combines optical and mechanical functions without the use of electronic devices or signals. Abbreviated MOMS. { ¦mī·krō ¦op·tō·mə'kan·ə·kəl ,sis·təm }

microperf [COMPUT SCI] A type of continuous-feed computer paper having extremely small perforations along the separations and edges which give separated pages the appearance of standard typewriter paper. { 'mī·krə,pərf }

microphone [ENG ACOUS] An electroacoustic device containing a transducer which is actuated by sound waves and delivers essentially equivalent electric waves. { 'mī·krə,fōn }

microphone transducer [ENG ACOUS] A device which converts variation in the position or velocity of some body into corresponding variations of some electrical quantity, in a microphone. { 'mī·krə,fōn tranz'dü·sər }

microphonics [ELECTR] Noise caused by mechanical vibration of the elements of an electron tube, component, or system. Also known as microphonism. { ,mī·krə'fän·iks }

microphonism *See* microphonics. { mī'krä·fə ,niz·əm }

microprocessing unit [ELECTR] A microprocessor with its external memory, input/output interface devices, and buffer, clock, and driver circuits. Abbreviated MPU. { ¦mī·krō'prä,ses·iŋ ,yü·nət }

microprocessor [ELECTR] A single silicon chip on which the arithmetic and logic functions of a computer are placed. { ¦mī·krō'prä,ses·ər }

microprocessor intertie and communication system [COMMUN] A data communications system which provides the communication network with its own dedicated processing resources and reduces in-terminal response time, compensating for the capacity used up by communications terminals. Abbreviated MICS. { mī·krō'prä,ses·ər 'in·tər,tī ən kə,myü·nə'kā·shən ,sis·təm }

microprogram [COMPUT SCI] A computer program that consists only of basic elemental commands which directly control the operation of each functional element in a microprocessor. { ¦mī·krō'prō·gram }

microprogrammable instruction [COMPUT SCI] An instruction that does not refer to a core memory address and that can be microprogrammed, thus specifying various commands within one instruction. { ¦mī·krō·prə'gram·ə·bəl in'strək·shən }

microprogramming [COMPUT SCI] Transformation of a computer instruction into a sequence of elementary steps (microinstructions) by which the computer hardware carries out the instruction. { ¦mī·krō'prō,gram·iŋ }

micropump *See* electroosmotic driver. { 'mī·krə ,pəmp }

microradiometer [ELECTR] A radiometer used for measuring weak radiant power, in which a thermopile is supported on and connected directly to the moving coil of a galvanometer. Also known as radiomicrometer. { ¦mīkrō,rād·ē'äm·əd·ər }

microspec function [COMPUT SCI] The set of microinstructions which performs a specific operation in one or more machine cycles. { 'mī·krə ,spek ,fəŋk·shən }

microstrip [ELECTROMAG] A strip transmission line that consists basically of a thin-film strip in intimate contact with one side of a flat dielectric substrate, with a similar thin-film ground-plane conductor on the other side of the substrate. { 'mī·krə,strip }

microsystem *See* micro-electro-mechanical system. { 'mī·krō,sis·təm }

microsystem electronics *See* microelectronics. { 'mī·krə,sis·təm i,lek'trän·iks }

microvolt [ELEC] A unit of potential difference equal to one-millionth of a volt. Abbreviated μV. { 'mī·krə,vōlt }

microvoltmeter [ELECTR] A voltmeter whose scale is calibrated to indicate voltage values in microvolts. { ¦mī·krō'vōlt,mēd·ər }

microwave [ELECTROMAG] An electromagnetic wave which has a wavelength between about 0.3 and 30 centimeters, corresponding to frequencies of 1–100 gigahertz; however, there are no sharp boundaries distinguishing microwaves from infrared and radio waves. { 'mī·krə,wāv }

microwave amplifier [ELECTR] A device which increases the power of microwave radiation. { 'mī·krə,wāv 'am·plə,fī·ər }

microwave antenna [ELECTROMAG] A combination of an open-end waveguide and a parabolic reflector or horn, used for receiving and transmitting microwave signal beams at microwave repeater stations. { 'mī·krə,wāv an'ten·ə }

microwave attenuator [ELECTROMAG] A device that causes the field intensity of microwaves in a waveguide to decrease by absorbing part of the incident power; usually consists of a piece of lossy material in the waveguide along the direction of the electric field vector. { 'mī·krə ,wāv ə'ten·yə,wād·ər }

microwave cavity *See* cavity resonator. { 'mī·krə ,wāv ,kav·ə·dē }

microwave circuit [ELECTROMAG] Any particular grouping of physical elements, including waveguides, attenuators, phase changers, detectors, wavemeters, and various types of junctions, which are arranged or connected together to produce certain desired effects on the behavior of microwaves. { 'mī·krə,wāv ,sər·kət }

microwave circulator *See* circulator. { 'mī·krə ,wāv 'sər·kyə,lād·ər }

microwave communication [COMMUN] Transmission of messages using highly directional microwave beams, which are generally relayed by a series of microwave repeaters spaced up to 50 miles (80 kilometers) apart. { 'mī·krə,wāv kə ,myü·nə'kā·shən }

microwave detector [ELECTR] A device that can demonstrate the presence of a microwave by a specific effect that the wave produces, such as a bolometer, or a semiconductor crystal making a pinpoint contact with a tungsten wire. { 'mī·krə ,wāv di,tek·tər }

microwave device [ELECTR] Any device capable of generating, amplifying, modifying, detecting, or measuring microwaves, or voltages having microwave frequencies. { 'mī·krə,wāv di,vīs }

microwave filter [ELECTROMAG] A device which passes microwaves of certain frequencies in a transmission line or waveguide while rejecting or absorbing other frequencies; consists of resonant cavity sections or other elements. { 'mī·krə,wāv ,fil·tər }

microwave generator *See* microwave oscillator. { 'mī·krə,wāv 'jen·ə,rād·ər }

microwave gyrator *See* gyrator. { 'mī·krə,wāv 'jī ,rād·ər }

microwave hop [COMMUN] A microwave communications channel between two stations with directive antennas that are aimed at each other. { 'mī·krə,wāv 'häp }

microwave integrated circuit [ELECTR] A microwave circuit that uses integrated-circuit production techniques involving such features as thin or thick films, substrates, dielectrics, conductors, resistors, and microstrip lines, to build passive assemblies on a dielectric. Abbreviated MIC. { 'mī·krə,wāv 'int·ə,grād·əd 'sər·kət }

microwave link *See* microwave repeater. { 'mī· krə,wāv ,liŋk }

microwave network [COMMUN] A series of microwave repeaters, spaced up to 50 miles (80 kilometers) apart, which relay messages over long distances using highly directional microwave beams. { 'mī·krə,wāv 'net,wərk }

microwave noise standard [ENG] An electrical noise generator of calculable intensity that is used to calibrate other noise sources by using comparison methods. { 'mī·krə,wāv 'noiz ,stan·dərd }

microwave oscillator [ELECTR] A type of electron tube or semiconductor device used for generating microwave radiation or voltage waveforms with microwave frequencies. Also known as microwave generator. { 'mī·krə,wāv 'äs·ə,lād·ər }

microwave radiometer *See* radiometer. { 'mī·krə ,wāv ,rād·ē'äm·əd·ər }

microwave receiver [ELECTR] Complete equipment that is needed to convert modulated microwaves into useful information. { 'mī·krə ,wāv ri'sē·vər }

microwave relay *See* microwave repeater. { 'mī· krə,wāv 'rē,lā }

microwave repeater [COMMUN] A tower that is equipped with a receiver and transmitter for picking up, amplifying, and passing on in either direction the signals sent over a microwave network by highly directional microwave beams. Also known as microwave link; microwave relay. { 'mī·krə,wāv ri'pēd·ər }

microwave resonance cavity *See* cavity resonator. { 'mī·krə,wāv 'rez·ən·əns ,kav·əd·ē }

microwave solid-state device [ELECTR] A semiconductor device for the generation or amplification of electromagnetic energy at microwave frequencies. { 'mī·krə,wāv ¦säl·əd ¦stāt di'vīs }

microwave transmission line [ELECTROMAG] A material structure forming a continuous path from one place to another and capable of directing the transmission of electromagnetic energy along this path. { 'mī·krə,wāv tranz'mish·ən ,līn }

microwave tube [ELECTR] A high-vacuum tube designed for operation in the frequency region from approximately 3000 to 300,000 megahertz. { 'mī·krə,wāv ,tüb }

microwave waveguide *See* waveguide. { 'mī·krə ,wāv 'wāv,gīd }

MICS *See* microprocessor intertie and communication system.

middle core [COMPUT SCI] The locations with medium addresses in a computer's main storage; usually assigned to workspace for application programs. { 'mid·əl 'kór }

middle-ultraviolet lamp [ELECTR] A mercury-vapor lamp designed to produce radiation in the wavelength band from 2800 to 3200 angstrom units (280 to 320 nanometers) such as sunlamps and photochemical lamps. { 'mid·əl ¦əl·trə ¦vī·lət 'lamp }

mid-frequency gain [ELECTR] The maximum gain of an amplifier, when this gain depends on the frequency; for an RC-coupled voltage amplifier the gain is essentially equal to this value over a large range of frequencies. { 'mid¦frē·kwən·sē ,gān }

MIDI *See* musical instrument digital interface. { 'mid·ē }

midicomputer [COMPUT SCI] A computer having greater performance and capacity than a minicomputer and less than that of a mainframe. { 'mid·ē·kəm,pyüd·ər }

midrange [ENG ACOUS] A loudspeaker designed to reproduce medium audio frequencies, generally used in conjunction with a crossover network, a tweeter, and a woofer. Also known as squawker. { 'mid,rānj }

mid-square generator [COMPUT SCI] A procedure for generating a sequence of random numbers, in which a member of a sequence is squared and the middle digits of the resulting number form the next member of the sequence. { 'mid¦skwer 'jen·ə,rād·ər }

Mie's double plate [ELEC] A device consisting of two small metal disks with insulating handles; they are held in contact in an electric field and then separated, and the charge on one of the disks is then measured to determine the electric displacement. { 'mēz ¦dəb·əl 'plāt }

MIG head *See* metal-in-gap head. { ¦em¦ī¦jē ,hed *or* 'mig ,hed }

migration [COMPUT SCI] Movement of frequently used data items to more accessible storage locations, and of infrequently used data items to less accessible locations. { mī'grā·shən }

Miller bridge [ELECTR] Type of bridge circuit for measuring amplification factors of vacuum tubes. { 'mil·ər ,brij }

Miller code [COMPUT SCI] A code used internally in some computers, in which a binary 1 is represented by a transition in the middle of a bit (either up or down), and a binary 0 is represented by no transition following a binary 1; a transition between bits represents successive 0's, in this code, the longest period possible without a transition is two bit times. { 'mil·ər ,kōd }

Miller effect [ELECTR] The increase in the effective grid-cathode capacitance of a vacuum tube due to the charge induced electrostatically on the grid by the anode through the grid-anode capacitance. { 'mil·ər i,fekt }

Miller generator *See* bootstrap integrator. { 'mil·ər 'jen·ə ,rād·ər }

Miller integrator [ELECTR] A resistor-capacitor charging network having a high-gain amplifier paralleling the capacitor; used to produce a linear time-base voltage. Also known as Miller time-base. { 'mil·ər 'int·ə,grād·ər }

Miller time-base *See* Miller integrator. { 'mil·ər 'tīm ,bās }

milliammeter [ELEC] An ammeter whose scale is calibrated to indicate current values in milliamperes. { ,mil·ē'am,ēd·ər }

milliampere [ELEC] A unit of current equal to one-thousandth of an ampere. Abbreviated mA. { ¦mil·ē'am,pir }

millifarad [ELEC] A unit of capacitance equal to one-thousandth of a farad. Abbreviated mF. { ¦mil·ē'far·əd }

Millikan meter [ELECTR] An integrating ionization chamber in which a gold-leaf electroscope is charged a known amount and ionizing events reduce this charge, so that the resulting angle through which the gold leaf is repelled at any given time indicates the number of ionizing events that have occurred. { 'mil·ə·kən,mēd·ər }

millimeter wave [ELECTROMAG] An electromagnetic wave having a wavelength between 1 millimeter and 1 centimeter, corresponding to frequencies between 30 and 300 gigahertz. Also known as millimetric wave. { 'mil·ə,mēd·ər 'wāv }

millimetric wave *See* millimeter wave. { ¦mil·ə ¦me·trik 'wāv }

million floating-point operations per second [COMPUT SCI] A unit used to measure the processing speed or throughput of supercomputers or array processors. Abbreviated Mflop. { 'mil·yən ¦flōd·iŋ ¦pȯint ,äp·ə'rā·shənz pər 'sek·ənd }

million instructions per second [COMPUT SCI] A unit used to measure the speed at which a computer's central processing unit can process instructions. Abbreviated MIPS. { 'mil·yən in'strək·shənz pər 'sek·ənd }

millivolt [ELEC] A unit of potential difference or emf equal to one-thousandth of a volt. Abbreviated mV. { 'mil·ə,vōlt }

millivoltmeter [ELEC] A voltmeter whose scale is calibrated to indicate voltage values in millivolts. { ,mil·ə'vōlt,mēdər }

Mills cross [ELECTROMAG] An antenna array that consists of two antennas oriented perpendicular to each other and that produces a narrow pencil beam. { 'milz 'krȯs }

MIMD [COMPUT SCI] A type of multiprocessor architecture in which several instruction cycles may be active at any given time, each independently fetching instructions and operands into multiple processing units and operating on them in a concurrent fashion. Acronym for multiple-instruction-stream, multiple-datastream.

MIME [COMPUT SCI] The Multimedia Internet Mail Enhancements standard, describing a way of encoding binary files, such as pictures, videos, sounds, and executable files, within a normal text message in an operating-system-independent manner. { mīm }

M-indicator *See* M-display. { 'em ˌin·dəˌkād·ər }

miniature electron tube [ELECTR] A small electron tube having no base, with tube electrode leads projecting through the glass bottom in positions corresponding to those of pins for either a seven-pin or nine-pin tube base. { 'min·ə·chər i'lekˌträn ˌtüb }

miniaturization [ELECTR] Reduction in the size and weight of a system, package, or component by using small parts arranged for maximum utilization of space. { ˌmin·ə·chə·rə'zā·shən }

minicartridge [COMPUT SCI] A self-contained package of reel-to-reel magnetic tape that resembles a cassette or cartridge but is slightly different in design and dimensions. { 'min·ēˌkär·trij }

minicomputer [COMPUT SCI] A relatively small general-purpose digital computer, intermediate in size between a microcomputer and a main frame. { 'min·ē·kəmˌpyüd·ər }

minidisk [COMPUT SCI] A floppy disk that has a diameter of 5.25 inches (approximately 13 centimeters). Also known as minifloppy disk. { 'min·ēˌdisk }

minifloppy disk *See* minidisk. { 'min·ēˌfläp·ēˌdisk }

minimal-latency coding *See* minimum-access coding. { 'min·ə·məl ¦lāt·ən·sē ˌkōd·iŋ }

minimal realization [CONT SYS] In linear system theory, a set of differential equations, of the smallest possible dimension, which have an input/output transfer function matrix equal to a given matrix function G(s). { 'min·ə·məl ˌrē·ə·lə'zā·shən }

minimize [COMMUN] Condition when normal message and telephone traffic is drastically reduced so messages connected with an actual or simulated emergency will not be delayed. [COMPUT SCI] In a graphical user interface environment, to reduce a window to an icon that represents the application running in the window. { 'min·əˌmīz }

minimum-access coding [COMPUT SCI] Coding in such a way that a minimum time is required to transfer words to and from storage, for a computer in which this time depends on the location in storage. Also known as minimal-latency coding; minimum-delay coding; minimum-latency coding. { 'min·ə·məm ¦akˌses ˌkōd·iŋ }

minimum-access programming [COMPUT SCI] The programming of a digital computer in such a way that minimum waiting time is required to obtain information out of the memory. Also known as forced programming; minimum-latency programming. { 'min·ə·məm ¦akˌses 'prōˌgram·iŋ }

minimum-access routine *See* minimum-latency routine. { 'min·ə·məm ¦akˌses rüˌtēn }

minimum configuration [COMPUT SCI] **1.** A computer system that has only essential hardware components. **2.** The smallest assortment of hardware and software components required to carry out a particular data-processing function. { 'min·ə·məm kənˌfig·yə'rā·shən }

minimum-delay coding *See* minimum-access coding. { 'min·ə·məm di¦lā 'kōd·iŋ }

minimum detectable signal *See* threshold signal. { 'min·ə·məm di'tek·tə·bəl 'sig·nəl }

minimum discernible signal [ELECTR] **1.** Receiver input power level that is just sufficient to produce a discernible signal in the receiver output; a receiver sensitivity test. **2.** In radar, the minimum echo power level at the input to the receiver that results in an output that can be confidently seem relative to the noise, usually determined with test equipment in the field. Abbreviated MDS. { 'min·ə·məm di'sər·nə·bəl 'sig·nəl }

minimum-distance code [COMMUN] A binary code in which the signal distance does not fall below a specified minimum value. { 'min·ə·məm ¦dis·təns 'kōd }

minimum firing current [ELEC] The limit below which firing will not occur in electric blasting caps. { 'min·ə·məm 'fīr·iŋ ˌkə·rənt }

minimum-latency coding *See* minimum-access coding. { 'min·ə·məm ¦lat·ən·sē ˌkōd·iŋ }

minimum-latency programming *See* minimum-access programming. { 'min·ə·məm ¦lat·ən·sē 'prōˌgram·iŋ }

minimum-latency routine [COMPUT SCI] A computer routine that is constructed so that the latency in serial-access storage is less than the random latency that would be expected if storage locations were chosen without regard for latency. Also known as minimum-access routine. { 'min·ə·məm ¦lat·ən·sē rüˌtēn }

minimum-loss attenuator [ELECTR] A section linking two unequal resistive impedances which is designed to introduce the smallest attenuation possible. Also known as minimum-loss pad. { 'min·ə·məm ¦lȯs ə'ten·yəˌwād·ər }

minimum-loss matching [ELECTR] Design of a network linking two resistive impedances so that it introduces a loss which is as small as possible. { 'min·ə·məm ¦lȯs ˌmach·iŋ }

minimum-loss pad *See* minimum-loss attenuator. { 'min·ə·məm ¦lȯs ˌpad }

minimum-phase system [CONT SYS] A linear system for which the poles and zeros of the transfer function all have negative or zero real parts. { 'min·ə·məm 'fāz ˌsis·təm }

minimum signal level [ELECTR] In facsimile, level corresponding to the copy white or copy black signal, whichever is the lower. { 'min·ə·məm 'sig·nəl ˌlev·əl }

mini-supercomputer [COMPUT SCI] A supercomputer that is about a quarter to a half as fast in vector processing as the most powerful supercomputers. { ˌmin·ē'sü·pər·kəmˌpyüd·ər }

minitrack [ELECTR] A subminiature radio transmitter capable of sending data over 4000 miles (6500 kilometers) on extremely low power. { 'min·ēˌtrak }

minor bend [ELECTROMAG] Rectangular waveguide bent so that throughout the length of a bend a longitudinal axis of the guide lies in one plane which is parallel to the narrow side of the waveguide. { 'mīn-ər 'bend }

minor control data [COMPUT SCI] Control data which are at the least significant level used, or which are used to sort records into the smallest groups used, for example, if control data are used to specify state, town, and street, then the data specifying street would be minor control data. { 'mīn-ər kən'trōl ˌdad-ə }

minor cycle [COMPUT SCI] The time required for the transmission or transfer of one machine word, including the space between words, in a digital computer using serial transmission. Also known as word time. { 'mīn-ər ˌsī-kəl }

minority carrier [SOLID STATE] The type of carrier, electron, or hole that constitutes less than half the total number of carriers in a semiconductor. { mə'när-əd-ē 'kar-ē-ər }

minority emitter [ELECTR] Of a transistor, an electrode from which a flow of minority carriers enters the interelectrode region. { mə'när-əd-ē i'mid-ər }

minor key [COMPUT SCI] A secondary key for identifying a record. { 'mīn-ər ˌkē }

minor lobe [ELECTROMAG] Any lobe except the major lobe of an antenna radiation pattern. Also known as secondary lobe; side lobe. { 'mīn-ər ¦lōb }

minor loop [CONT SYS] A portion of a feedback control system that consists of a continuous network containing both forward elements and feedback elements. { 'mīn-ər ¦lüp }

minor relay station [ELECTR] A tape relay station which has tape relay responsibility but does not provide an alternate route. { 'mīn-ər 'rē,lā ˌstā-shən }

minor switch [ELEC] Single-motion stepping switch mounted atop the telephone connectors and most commonly used for the party-line selection. { 'mīn-ər ¦swich }

minus zone [COMPUT SCI] The bit positions in a computer code that represent the algebraic minus sign. { 'mī-nəs ˌzōn }

MIPS *See* million instructions per second.

mirage effect [COMMUN] Reception of radio waves at distances far beyond the normally expected range due to abnormal refraction caused by meteorological conditions such as abnormal vertical water-vapor and temperature gradients. { mə'räzh i,fekt }

mirror galvanometer [ELEC] A galvanometer having a small mirror attached to the moving element, to permit use of a beam of light as an indicating pointer. Also known as reflecting galvanometer. { 'mir-ər ˌgal-və'näm-əd-ər }

mirroring [COMPUT SCI] The recording of the same data in two or more locations to ensure continuous operation of a computer system in the event of a failure. { 'mir-ər-iŋ }

MIS *See* management information system; metal-insulator semiconductor.

misfire [ELECTR] Failure to establish an arc between the main anode and the cathode of an ignitron or other mercury-arc rectifier during a scheduled conducting period. { 'mis,fīr }

mismatch [ELEC] The condition in which the impedance of a source does not match or equal the impedance of the connected load or transmission line. { 'mis,mach }

mismatch factor *See* reflection factor. { 'mis ˌmach ˌfak-tər }

mismatch loss [ELECTR] Loss of power delivered to a load as a result of failure to make an impedance match of a transmission line with its load or with its source. { 'mis,mach ˌlòs }

mismatch slotted line [ELECTROMAG] A slotted line linking two waveguides which is not properly designed to minimize the power reflected or transmitted by it. { 'mis,mach 'släd-əd 'līn }

misregistration [COMPUT SCI] In character recognition, the improper state of appearance of a character, line, or document, on site in a character reader, with respect to a real or imaginary horizontal baseline. { ˌmis,rej-ə'strā-shən }

missing error [COMPUT SCI] The result of calling for a subroutine not available in the library. { ˌmis-iŋ 'er-ər }

mistake [COMPUT SCI] A human action producing an unintended result, in contrast to an error in a computer operation. { mə'stāk }

misuse detection [COMPUT SCI] The technology that seeks to identify an attack on a computer system by its attempted effect on sensitive resources. { mis'yüs di,tek-shən }

mixed congruential generator [COMPUT SCI] A congruential generator in which the constant b in the generating formula is not equal to zero. { 'mikst ˌkän-grü'en-chəl 'jen-ə,rād-ər }

mixed-entry decision table [COMPUT SCI] A decision table in which the action entries may be either sequenced or unsequenced. { 'mikst ¦en-trē di'sizh-ən ˌtā-bəl }

mixed highs [COMMUN] In analog color television, a method of reproducing very fine picture detail by transmitting high-frequency components as part of luminance signals for achromatic reproduction in color pictures. { 'mikst 'hīz }

mixed-mode expression [COMPUT SCI] An expression involving operands of more than one data type. { 'mikst ¦mōd ik'spresh-ən }

mixer [ELECTR] **1.** A device having two or more inputs, usually adjustable, and a common output, used to combine separate audio or video signals linearly in desired proportions to produce an output signal. **2.** The stage in a superheterodyne receiver in which the incoming modulated radio-frequency signal is combined with the signal of a local r-f oscillator to produce a modulated intermediate-frequency signal. Also known as first detector; heterodyne modulator; mixer-first detector. { 'mik-sər }

mixer-first detector *See* mixer. { 'mik-sər ¦fərst di'tek-tər }

mixer tube [ELECTR] A multigrid electron tube, used in a superheterodyne receiver, in which control voltages of different frequencies are impressed upon different control grids, and the nonlinear properties of the tube cause the

generation of new frequencies equal to the sum and difference of the impressed frequencies. { 'mik·sər ˌtüb }

mixing [ELECTR] Combining two or more signals, such as the outputs of several microphones. { 'mik·siŋ }

MMSS *See* maritime mobile satellite service.

mnemonic code [COMPUT SCI] A programming code that is easy to remember because the codes resemble the original words, such as MPY for multiply and ACC for accumulator. { nə'män·ik 'kōd }

MNOS *See* metal-nitride-oxide semiconductor.

mobile code [COMPUT SCI] Code that can be transmitted across, and executed at the other end of, a network, and is capable of running on multiple platforms, for example, Java. { ˌmō·bəl 'kōd }

mobile digital computer [COMPUT SCI] Large, mobile, fixed-point operation, one-address, parallel-mode type digital computer. { 'mō·bəl ¦dij·əd·əl kəm'pyüd·ər }

mobile earth station [COMMUN] An earth station intended to be used while in motion or at halts at unspecified points. { ˌmō·bəl 'ərth ˌstā·shən }

mobile earth terminal [COMMUN] An antenna small enough to fit in a briefcase or suitcase, used for satellite communications, especially by news-service reporters at locations that cannot be accessed by conventional transportable satellite news-gathering terminals. Abbreviated MET. { ˌmō·bəl 'ərth ˌtər·mən·əl }

mobile radio [COMMUN] Radio communication in which the transmitter is installed in a vessel, vehicle, or airplane and can be operated while in motion. { 'mō·bəl 'rād·ē·ō }

mobile-relay station [COMMUN] Base station in which the base receiver automatically tunes on the base station transmitter and which retransmits all signals received by the base station receiver, used to extend the range of mobile units, and requires two frequencies for operation. { 'mō·bəl 'rē;lā ˌstā·shən }

mobile robot [CONT SYS] A robot mounted on a movable platform that transports it to the area where it carries out tasks. { 'mō·bəl 'rō,bät }

mobile satellite service [COMMUN] A radiocommunication service between mobile earth stations by means of one or more space stations. Abbreviated MSS. { ¦mō·bəl 'sad·əl,īt ˌsər·vəs }

mobile service [COMMUN] A radiocommunication service between mobile and land stations or between mobile stations. { ¦mō·bəl 'sər·vəs }

mobile station [COMMUN] **1.** Station in the mobile service intended to be used while in motion or during halts at unspecified points. **2.** One or more transmitters that are capable of transmission while in motion. { 'mō·bəl 'stā·shən }

mobile systems equipment [COMPUT SCI] Computers located on planes, ships, or vans. { 'mō·bəl 'sis·təmz i,kwip·mənt }

Möbius resistor [ELEC] A nonreactive resistor made by placing strips of aluminum or other metallic tape on opposite sides of a length of dielectric ribbon, twisting the strip assembly half a turn, joining the ends of the metallic tape, then soldering leads to opposite surfaces of the resulting loop. { 'mər·bē·əs ri,zis·tər }

modal distortion *See* modal noise. { ¦mōd·əl di'stȯr·shən }

modal noise [COMMUN] Interference of a multimode optical communications fiber with a laser light source when a speckle pattern in the light intensity in the fiber alters because of motion of the fiber or changes in the laser spectrum. Also known as modal distortion. { ¦mōd·əl 'nȯiz }

mode [COMMUN] Form of the information in a communication such as literal language, digital data, and video. [COMPUT SCI] One of several alternative conditions or methods of operation of a device. [ELECTROMAG] A form of propagation of guided waves that is characterized by a particular field pattern in a plane transverse to the direction of propagation. Also known as transmission mode. { mōd }

mode converter *See* mode transducer. { 'mōd kən,vərd·ər }

mode filter [ELECTROMAG] A waveguide filter designed to separate waves of the same frequency but of different transmission modes. { 'mōd ˌfil·tər }

mode jump [ELECTR] Change in mode of magnetron operation from one pulse to the next, each mode represents a different frequency and power level. { 'mōd ˌjəmp }

model *See* macroskeleton. { 'mäd·əl }

model-based expert system [COMPUT SCI] An expert system that is based on knowledge of the structure and function of the object for which the system is designed. { ¦mäd·əl ˌbāst 'ek·spərt ˌsis·təm }

model-following problem [CONT SYS] The problem of determining a control that causes the response of a given system to be as close as possible to the response of a model system, given the same input. { 'mäd·əl ¦fäl·ə·wiŋ ˌpräb·ləm }

model reduction [CONT SYS] The process of discarding certain modes of motion while retaining others in the model used by an active control system, in order that the control system can compute control commands with sufficient rapidity. { 'mäd·əl ri'dək·shən }

model reference system [CONT SYS] An ideal system whose response is agreed to be optimum; computer simulation in which both the model system and the actual system are subjected to the same stimulus is carried out, and parameters of the actual system are adjusted to minimize the difference in the outputs of the model and the actual system. { 'mäd·əl 'ref·rəns ˌsis·təm }

model symbol [COMPUT SCI] The standard usage of geometrical figures, such as squares, circles, or triangles, to help illustrate the various working parts of a model; each symbol must, nevertheless, be footnoted for complete clarification. { 'mäd·əl ˌsim·bəl }

modem [ELECTR] A combination modulator and demodulator at each end of a telephone line to convert binary digital information to audio tone signals suitable for transmission over the

line, and vice versa. Derived from modulator-demodulator. { 'mō,dem }

modem eliminator [COMPUT SCI] A device that is used to connect two computers in proximity and that mimics the action of two modems and a telephone line. { 'mō,dem ə'lim-ə,nād-ər }

mode number [ELECTR] **1.** The number of complete cycles during which an electron of average speed is in the drift space of a reflex klystron. **2.** The number of radians of phase in the microwave field of a magnetron divided by 2π as one goes once around the anode. { 'mōd ,nəm-bər }

moder *See* coder. { 'mōd-ər }

modern control [CONT SYS] A control system that takes account of the dynamics of the processes involved and the limitations on measuring them, with the aim of approaching the condition of optimal control. { 'mäd-ərn kən'trōl }

mode shift [ELECTR] Change in mode of magnetron operation during a pulse. { 'mōd ,shift }

mode skip [ELECTR] Failure of a magnetron to fire on each successive pulse. { 'mōd ,skip }

mode switch [COMPUT SCI] A preset control which affects the normal response of various components of a mechanical desk calculator. [ELECTR] A microwave control device, often consisting of a waveguide section of special cross section, which is used to change the mode of microwave power transmission in the waveguide. { 'mōd ,swich }

mode transducer [ELECTR] Device for transforming an electromagnetic wave from one mode of propagation to another. Also known as mode converter, mode transformer. { 'mōd tranz ,dü-sər }

mode transformer *See* mode transducer. { 'mōd tranz,fór-mər }

MODFET *See* high-electron-mobility transistor. { 'mäd,fet }

modified constant-voltage charge [ELEC] Charging of a storage battery in which the voltage of the charging circuit is held substantially constant, but a fixed resistance is inserted in the battery circuit producing a rising voltage characteristic at the battery terminals as the charge progresses. { 'mäd-ə,fīd |kän-stənt |vōl-tij 'chärj }

modifier [COMPUT SCI] A quantity used to alter the address of an operand in a computer, such as the cycle index. Also known as index word. { 'mäd-ə ,fī-ər }

modifier register *See* index register. { 'mäd-ə ,fī-ər ,rej-ə-stər }

modify [COMPUT SCI] **1.** To alter a portion of an instruction so its interpretation and execution will be other than normal; the modification may permanently change the instruction or leave it unchanged and affect only the current execution, the most frequent modification is that of the effective address through the use of index registers. **2.** To alter a subroutine according to a defined parameter. { 'mäd-ə,fī }

modify structure [COMPUT SCI] A statement in a database language that allows changes to be made in the structure of the records in a file. { 'mäd-ə,fī ,strək-chər }

moding [ELECTR] Defect of magnetron oscillation in which it oscillates in one or more undesired modes. { 'mōd-iŋ }

modula-2 [COMPUT SCI] A general-purpose programming language that allows a computer program to be written as separate modules which can be compiled separately but can share a common code. { 'mäj-ə-lə 'tü }

modular circuit [ELECTR] Any type of circuit assembled to form rectangular or cubical blocks that perform one or more complete circuit functions. { 'mäj-ə-lər 'sər-kət }

modular compilation [COMPUT SCI] The separate translation into machine language of the individual parts of a computer program, which are then combined into a single program by a linkage editor. { 'mäj-ə-lər ,käm-pə'lā-shən }

modularity [COMPUT SCI] The property of functional flexibility built into a computer system by assembling discrete units which can be easily joined to or arranged with other parts or units. { ,mäj-ə'lar-əd-ē }

modular programming [COMPUT SCI] The construction of a computer program from a collection of modules, each of workable size, whose interactions are rigidly restricted. { 'mäj-ə-lər 'prō,gram-iŋ }

modular structure [ELECTR] **1.** An assembly involving the use of integral multiples of a given length for the dimensions of electronic components and electronic equipment, as well as for spacings of holes in a chassis or printed wiring board. **2.** An assembly made from modules. { 'mäj-ə-lər 'strək-chər }

modulate [ELECTR] To vary the amplitude, frequency, or phase of a wave, or vary the velocity of the electrons in an electron beam in some characteristic manner. { 'mäj-ə,lāt }

modulated amplifier [ELECTR] Amplifier stage in a transmitter in which the modulating signal is introduced and modulates the carrier. { 'mäj-ə ,lād-əd 'am-plə,fī-ər }

modulated carrier [COMMUN] Radio-frequency carrier wave whose amplitude, phase, or frequency has been varied according to the intelligence to be conveyed. { 'mäj-ə,lād-əd 'kar-ē-ər }

modulated continuous wave [COMMUN] Wave in which the carrier is modulated by a constant audio-frequency tone. { 'mäj-ə,lād-əd kən |tin-yə-wəs 'wāv }

modulated stage [ELECTR] Radio-frequency stage to which the modulator is coupled and in which the continuous wave (carrier wave) is modulated according to the system of modulation and the characteristics of the modulating wave. { 'mäj-ə ,lād-əd 'stāj }

modulating electrode [ELECTR] Electrode to which a potential is applied to control the

magnitude of the beam current. { 'mäj·ə,lād·iŋ i'lek,trōd }

modulating signal |COMMUN| Signal which causes a variation of some characteristics of a carrier. { 'mäj·ə,lād·iŋ 'sig·nəl }

modulation |COMMUN| The process or the result of the process by which some parameter of one wave is varied in accordance with some parameter of another wave. { ,mäj·ə'lā·shən }

modulation capability |ELECTR| Of an aural transmitter, the maximum percentage modulation that can be obtained without exceeding a given distortion figure. { ,mäj·ə'lā·shən ,kā·pə·'bil·ə·dē }

modulation code |COMMUN| A code used to cause variations in a signal in accordance with a predetermined scheme; normally used to alter or modulate a carrier wave to transmit data. { ,mäj·ə'lā·shən ,kōd }

modulation crest |COMMUN| The peak amplitude of an amplitude-modulated wave. { ,mäj·ə'lā·shən 'krest }

modulation-doped field-effect transistor *See* high-electron-mobility transistor. { ,mäj·ə'lā·shən ¦dōpt 'fēld i¦fekt tran'zis·tər }

modulation envelope |COMMUN| The peaks of the waveform of a modulated signal. { ,mäj·ə'lā·shən 'en·və,lōp }

modulation factor |COMMUN| **1.** In general, the ratio of the peak variation in the modulation actually used in a transmitter to the maximum variation for which the transmitter was designed. **2.** In an amplitude-modulated wave, the ratio (usually expressed in percent) of the peak variation of the envelope from its reference value, to the reference value. Also known as index of modulation. **3.** In a frequency-modulated wave, the ratio of the actual frequency swing to the frequency swing required for 100% modulation. { ,mäj·ə'lā·shən ,fak·tər }

modulation index |COMMUN| The ratio of the frequency deviation to the frequency of the modulating wave in a frequency-modulation system when using a sinusoidal modulating wave. Also known as ratio deviation. { ,mäj·ə'lā·shən ,in ,deks }

modulation meter |ENG| Instrument for measuring the degree of modulation (modulation factor) of a modulated wave train, usually expressed in percent. { ,mäj·ə'lā·shən ,mēd·ər }

modulation rise |ELECTR| Increase of the modulation percentage caused by nonlinearity of any tuned amplifier, usually the last intermediate-frequency stage of a receiver. { ,mäj·ə'lā·shən ,rīz }

modulation transformer |ENG ACOUS| An audio-frequency transformer which matches impedances and transmits audio frequencies between one or more plates of an audio output stage and the grid or plate of a modulated amplifier. { ,mäj·ə'lā·shən tranz,fôr·mər }

modulator |ELECTR| **1.** The transmitter component that supplies the modulating signal to the amplifier stage or that triggers the modulated amplifier stage to produce pulses at desired instants as in radar. **2.** A device that produces modulation by any means, such as by virtue of a nonlinear characteristic or by controlling some circuit quantity in accordance with the waveform of a modulating signal. { 'mäj·ə,lād·ər }

modulator-demodulator *See* modem. { 'mäj·ə ,lād·ər dē'mäj·ə,lād·ər }

modulator glow tube |ELECTR| Cold cathode recorder tube that is used for facsimile and sound-on-film recording; provides a modulated high-intensity point source of light. { 'mäj·ə ,lād·ər 'glō ,tüb }

module |COMPUT SCI| **1.** A distinct and identifiable unit of computer program for such purposes as compiling, loading, and linkage editing. **2.** One memory bank and associated electronics in a computer. |ELECTR| A packaged assembly of wired components, built in a standardized size and having standardized plug-in or solderable terminations. { 'mäj·ül }

modulo N check |COMPUT SCI| A procedure for verification of the accuracy of a computation by repeating the steps in modulo N arithmetic and comparing the result with the original result (modulo N). Also known as residue check. { 'mäj·ə,lō ¦en 'chek }

modulo-two adder |COMPUT SCI| A logical circuit for adding one-digit binary numbers. { 'mäj·ə ,lō ¦tü 'ad·ər }

MOEMS *See* micro-opto-electro-mechanical system. { 'mō,emz }

moiré |COMMUN| In a video system, the spurious pattern in the reproduced picture resulting from interference beats between two sets of periodic structures in the image. { mó'rā }

molded capacitor |ELEC| Capacitor, usually mica, that has been encased in a molded plastic insulating material. { 'mōl·dəd kə'pas·əd·ər }

molecular circuit |ELECTR| A circuit in which the individual components are physically indistinguishable from each other. { mə'lek·yə·lər 'sər·kət }

molecular electronics |ELECTR| The use of biological or organic molecules for fabricating electronic materials with novel electronic, optical, or magnetic properties; applications include polymer light-emitting diodes, conductive-polymer sensors, pyroelectric plastics, and potentially, molecular computational devices. { mə'lek·yə·lər i,lek'trän·iks }

molecular engineering |ELECTR| The use of solid-state techniques to build, in extremely small volumes, the components necessary to provide the functional requirements of overall equipments, which when handled in more conventional ways are vastly bulkier. { mə'lek·yə·lər ,en·jə'nir·iŋ }

moment sensor |ENG| A device that measures the force applied at a remote point in a robotic system. { 'mō·mənt ,sen·sər }

MOMS *See* micro-opto-mechanical system. { mämz *or* ¦em¦ō¦em'es }

monadic operation |COMPUT SCI| An operation on one operand, such as a negation. { mō'nad·ik ,äp·ə'rā·shən }

monaural sound [ENG ACOUS] Sound produced by a system in which one or more microphones are connected to a single transducing channel which is coupled to one or two earphones worn by the listener. { män'ôr·əl 'saund }

monitor [COMPUT SCI] **1.** To supervise a program, and check that it is operating correctly during its execution, usually by means of a diagnostic routine. **2.** *See* video monitor. { 'män·əd·ər }

monitor board [COMMUN] A console at which a supervising telephone operator sits and from which she or he can intercept calls being handled by other operators. { 'män·əd·ər ˌbȯrd }

monitor control dump [COMPUT SCI] A memory dump routinely carried out by the system once a program has been run. { 'män·əd·ər kən'trōl ˌdəmp }

monitor display [COMPUT SCI] The facility of stopping the central processing unit and displaying information of main storage and internal registers; after manual intervention, normal instruction execution can be initiated. { 'män·əd·ər di ˌsplā }

monitoring amplifier [ELECTR] A power amplifier used primarily for evaluation and supervision of a program. { 'män·ə·triŋ ˌam·plə,fī·ər }

monitoring key [ELECTR] Key which, when operated, makes it possible for an attendant or operator to listen on a telephone circuit without appreciably impairing transmission on the circuit. { 'män·ə·triŋ ˌkē }

monitor mode *See* master mode. { 'män·əd·ər ˌmōd }

monitor operating system [COMPUT SCI] The control of the routines which achieves efficient use of all the hardware components. { 'män·əd·ər 'äp·əˌrād·iŋ ˌsis·təm }

monitor printer [COMMUN] A teleprinter used in a technical control facility or communications center for checking incoming teletypewriter signals. [COMPUT SCI] Input-output device, capable of receiving coded signals from the computer, which automatically operates the keyboard to print a hard copy and, when desired, to punch paper tape. { 'män·əd·ər ˌprint·ər }

monitor routine *See* executive routine. { 'män·əd·ər rü,tēn }

monobrid circuit [ELECTR] Integrated circuit using a combination of monolithic and multichip techniques by means of which a number of monolithic circuits, or a monolithic device in combination with separate diffused or thin-film components, are interconnected in a single package. { 'män·əˌbrid ˌsər·kət }

monocharge electret [ELECTR] A type of foil electret that carries electrical charge of the same sign on both surfaces. { 'män·ō,chärj i'lek·trət }

monochromatic radiation [ELECTROMAG] Electromagnetic radiation having wavelengths confined to an extremely narrow range. { mänə·krə'mad·ik ˌrād·ē'ā·shən }

monochrome channel [ELECTR] In a color television system, any path which is intended to carry the monochrome signal; the monochrome channel may also carry other signals. { 'män·əˌkrōm ¦chan·əl }

monochrome signal [ELECTR] **1.** A signal waveform used for controlling luminance values in monochrome television. **2.** The portion of a signal wave that has major control of the luminance values in a color television system, regardless of whether the picture is displayed in color or in monochrome. Also known as M signal. { 'män·əˌkrōm ˌsig·nəl }

monochrome television [COMMUN] Television in which the final reproduced picture is monochrome, having only shades of gray between black and white. Also known as black-and-white television. { 'män·əˌkrōm 'tel·əˌvizh·ən }

monocord switchboard [ELEC] Local battery switchboard in which each telephone line terminates in a single jack and plug. { 'män·ə ˌkȯrd 'swichˌbȯrd }

monofier [ELECTR] Complete master oscillator and power amplifier system in a single evacuated tube envelope; electrically, it is equivalent to a stable low-noise oscillator, an isolator, and a two- or three-cavity klystron amplifier. { 'män·əˌfī·ər }

monolithic ceramic capacitor [ELECTR] A capacitor that consists of thin dielectric layers interleaved with staggered metal-film electrodes; after leads are connected to alternate projecting ends of the electrodes, the assembly is compressed and sintered to form a solid monolithic block. { ˌmän·ə'lith·ik sə'ram·ik kə'pas·əd·ər }

monolithic filter [COMMUN] A device used to separate telephone communications sent simultaneously over the transmission line, consisting of a series of electrodes vacuum-deposited on a crystal plate so that the plated sections are resonant with ultrasonic sound waves, and the effect of the device is similar to that of an electric filter. { ˌmän·ə'lith·ik 'fil·tər }

monolithic integrated circuit [ELECTR] An integrated circuit having elements formed in place on or within a semiconductor substrate, with at least one element being formed within the substrate. { ˌmän·ə'lith·ik 'int·əˌgrād·əd 'sər·kət }

monophonic sound [ENG ACOUS] Sound produced by a system in which one or more microphones feed a single transducing channel which is coupled to one or more loudspeakers. { ¦män·əˈfän·ik ˌsaund }

monopinch [ELECTR] Antijam application of the monopulse technique where the error signal is used to provide discrimination against jamming signals. { 'män·ōˌpinch }

monopole antenna [ELECTROMAG] An antenna, usually in the form of a vertical tube or helical whip, on which the current distribution forms a standing wave, and which acts as one part of a dipole whose other part is formed by its electrical image in the ground or in an effective ground plane. Also known as spike antenna. { 'män·əˌpōl an'ten·ə }

monopulse [ELECTR] A radar technique for accurate estimation of target position in angle and range on each pulse transmitted, without requiring sequential transmission as in, for

example, conical scanning radars; reduces errors due to echo fluctuations. { 'män·ə,pəls }

monoscope [ELECTR] A signal-generating electron-beam tube in which a picture signal is produced by scanning an electrode that has a predetermined pattern of secondary-emission response over its surface. Also known as monotron; phasmajector. { 'män·ə,skōp }

monostable [ELECTR] Having only one stable state. { ¦män·ō¦stā·bəl }

monostable blocking oscillator [ELECTR] A blocking oscillator in which the electron tube or other active device carries no current unless positive voltage is applied to the grid. Also known as driven blocking oscillator. { ¦män·ō ¦stā·bəl 'bläk·iŋ ¦äs·ə,lād·ər }

monostable circuit [ELECTR] A circuit having only one stable condition, to which it returns in a predetermined time interval after being triggered. { ¦män·ō¦stā·bəl 'sər·kət }

monostable multivibrator [ELECTR] A multivibrator with one stable state and one unstable state; a trigger signal is required to drive the unit into the unstable state, where it remains for a predetermined time before returning to the stable state. Also known as one-shot multivibrator; single-shot multivibrator; start-stop multivibrator; univibrator. { ¦män·ō¦stā·bəl ˌməl·tə'vī ˌbrād·ər }

monostatic radar [ENG] A radar with transmitter and receiver in the same place, whether or not it uses a duplexed antenna. { ¦män·ə¦stad·ik 'rā ˌdär }

monotonicity [ELECTR] In an analog-to-digital converter, the condition wherein there is an increasing output for every increasing value of input voltage over the full operating range. { ˌmän·ə·tə'nis·əd·ē }

monotron *See* monoscope. { 'män·əˌträn }

Moore code [COMMUN] A binary teleprinter code with seven binary digits for each letter. { 'mu̇r ˌkōd }

Moore machine [COMPUT SCI] A sequential machine in which the output depends uniquely on the current state of the machine, and not on the input. { 'mu̇r məˌshēn }

Moore's law [COMPUT SCI] The prediction by Gordon Moore (cofounder of the Intel Corporation) that the number of transistors on a microprocessor would double periodically (approximately every 18 months). { 'mu̇rz ˌlȯ }

Moore-Smith sequence *See* net. { ¦mu̇r 'smith ˌsē·kwəns }

Morse cable code [COMMUN] A code used chiefly in submarine cable telegraphy, in which positive and negative current impulses of equal length represent dots and dashes, and a space is represented by the absence of current. Also known as cable code; International cable code. { 'mȯrs 'kā·bəl ˌkōd }

Morse code [COMMUN] **1.** A telegraph code for manual operating, consisting of short (dot) and long (dash) signals and various-length spaces. Also known as American Morse code. **2.** Collective term for Morse code (American Morse code) and continental code (International Morse code). { 'mȯrs 'kōd }

MOS *See* metal oxide semiconductor.

mosaic [ELECTR] A light-sensitive surface used in video camera tubes, consisting of a thin mica sheet coated on one side with a large number of tiny photosensitive silver-cesium globules, insulated from each other. { mō'zā·ik }

MOS controlled thyristor [ELECTR] A type of thyristor in which there is a very thin metal oxide semiconductor (MOS) integrated circuit in the top surface of the high-power thyristor components, so that only a small gate current is needed to turn the entire device off or on. Abbreviated MCT. { ¦em¦ō¦es kən,trōld thī'ris·tər }

MOSFET *See* metal oxide semiconductor field-effect transistor. { 'mȯs,fet }

MOSFET-C filter [ELECTR] An active integrated-circuit filter in which the resistors of an active-RC filter are replaced with metal oxide semiconductor field-effect transistors (MOSFETs). { ¦mȯs ˌfet 'sē ˌfil·tər }

Mosotti field *See* Lorentz local field. { mȯ'sād·ē ˌfēld }

MOST *See* metal oxide semiconductor field-effect transistor.

MOS transistor *See* metal oxide semiconductor field-effect transistor. { ¦em¦ō'es tran'zis·tər }

most significant bit [COMPUT SCI] The left-most bit in a word. Abbreviated msb. { 'mōst sig 'nif·i·gənt 'bit }

most significant character [COMPUT SCI] The character in the leftmost position in a number or word. { 'mōst sig'nif·i·gənt 'kar·ik·tər }

motherboard [COMPUT SCI] A common pathway over which information is transmitted between the hardware devices (the central processing unit, memory, and each of the peripheral control units) in a microcomputer. { 'məth·ərˌbȯrd }

motional impedance [ELECTR] Of a transducer, the complex remainder after the blocked impedance has been subtracted from the loaded impedance. Also known as loaded motional impedance. { 'mō·shən·əl im'pēd·əns }

motion-compensated coding scheme [COMMUN] A form of differential pulse-code modulation in which the motions of objects are estimated and comparisons of intensities are carried out between picture elements in successive frames spatially displaced by an amount equal to the motion of an object. { 'mō·shən ¦käm·pənˌsād·əd 'kōd·iŋ ˌskēm }

motion picture pickup [ELECTR] Use of a television camera to pick up scenes directly from motion picture film. { 'mō·shən ¦pik·chər 'pikˌəp }

motion register [COMPUT SCI] The register which controls the go/stop, forward/reverse motion of a tape drive. { 'mō·shən ˌrej·ə·stər }

motion vector [COMMUN] A pair of numbers which represent the vertical and horizontal displacement of a region of a reference picture for MPEG-2 prediction. { 'mō·shan 'vek·tər }

motor [ELEC] A machine that converts electric energy into mechanical energy by utilizing forces

produced by magnetic fields on current-carrying conductors. Also known as electric motor. { 'mōd·ər }

motorboating [ELECTR] Undesired oscillation in an amplifying system or transducer, usually of a pulse type, occurring at a subaudio or low-audio frequency. { 'mōd·ər,bōd·iŋ }

motor branch circuit [ELEC] A branch circuit that terminates at a motor; it must have conductors with current-carrying capacity at least 125% of the motor full-load current rating, and overcurrent protection capable of carrying the starting current of the motor. { 'mōd·ər 'branch ,sər·kət }

motor control See electronic motor control. { 'mōd·ər kən,trōl }

motor-converter [ELEC] Induction motor and a synchronous converter with their rotors mounted on the same shaft and with their rotor windings connected in series; such converter operates synchronously at a speed corresponding to the sum of the numbers of poles of the two machines. { 'mōd·ər kən'vərd·ər }

motor element [ENG ACOUS] That portion of an electroacoustic receiver which receives energy from the electric system and converts it into mechanical energy. { 'mōd·ər ,el·ə·mənt }

motor-generator set [ELEC] A motor and one or more generators that are coupled mechanically for use in changing one power-source voltage to other desired voltages or frequencies. { 'mōd·ər 'jen·ə,rād·ər ,set }

mountain effect [ELECTROMAG] The effect of rough terrain on radio-wave propagation, causing reflections that produce errors in radio direction-finder indications. { 'maunt·ən i,fekt }

mousable interface [COMPUT SCI] A user interface that responds to input from a mouse for various functions. { ¦maüs·ə·bəl 'in·tər,fās }

mouse [COMPUT SCI] A small device with a rubber-coated ball that is moved about by hand over a flat surface and generates signals to control the position of a cursor or pointer on a computer display. { maüs }

movable contact [ELEC] The relay contact that is mechanically displaced to engage or disengage one or more stationary contacts. Also known as armature contact. { 'mü·və·bəl 'kän,takt }

movable-head disk drive [COMPUT SCI] A type of disk drive in which read/write heads are moved over the surface of the disk, toward and away from the center, so that they are correctly positioned to read or write the desired information. { 'mü·və·bəl ¦hed 'disk ,drīv }

move mode [COMPUT SCI] A method of communicating between an operating program and an input/output control system in which the data records to be read or written are actually moved into and out of program-designated memory areas. { 'müv ,mōd }

move operation [COMPUT SCI] An operation in which data is moved from one storage location to another. { 'müv ,äp·ə,rā·shən }

moving-coil galvanometer [ENG] Any galvanometer, such as the d'Arsonval galvanometer, in which the current to be measured is sent through a coil suspended or pivoted in a fixed magnetic field, and the current is determined by measuring the resulting motion of the coil. { 'müv·iŋ ¦kȯil ,gal·və'näm·əd·ər }

moving-coil instrument [ELEC] Any instrument in which current is sent through one or more coils suspended or pivoted in a magnetic field, and the motion of the coils is used to measure either the current in the coils or the strength of the field. { 'müv·iŋ ¦kȯil 'in·strə·mənt }

moving-coil loudspeaker See dynamic loudspeaker. { 'müv·iŋ ¦kȯil 'laüd,spēk·ər }

moving-coil meter [ELEC] A meter in which a pivoted coil is the moving element. { 'müv·iŋ ¦kȯil 'mēd·ər }

moving-coil microphone See dynamic microphone. { 'müv·iŋ ¦kȯil 'mī·krə,fōn }

moving-coil pickup See dynamic pickup. { 'müv·iŋ ¦kȯil 'pik,əp }

moving-coil voltmeter [ENG] A voltmeter in which the current, produced when the voltage to be measured is applied across a known resistance, is sent through coils pivoted in the magnetic field of permanent magnets, and the resulting torque on the coils is balanced by control springs so that the deflection of a pointer attached to the coils is proportional to the current. { 'müv·iŋ ¦kȯil 'vōlt,mēd·ər }

moving-conductor loudspeaker [ENG ACOUS] A loudspeaker in which the mechanical forces result from reactions between a steady magnetic field and the magnetic field produced by current flow through a moving conductor. { 'müv·iŋ kən ¦dək·tər 'laüd,spēk·ər }

moving-head disk [COMPUT SCI] A disk-storage device in which one or more read-write heads are attached to a movable arm which allows each head to cover many tracks of information. { 'müv·iŋ ¦hed 'disk }

moving-iron voltmeter [ENG] A voltmeter in which a field coil is connected to the voltage to be measured through a series resistor; current in the coil causes two vanes, one fixed and one attached to the shaft carrying the pointer, to be similarly magnetized; the resulting torque on the shaft is balanced by control springs. { 'müv·iŋ ¦ī·ərn 'vōlt,mēd·ər }

moving-magnet voltmeter [ENG] A voltmeter in which a permanent magnet aligns itself with the resultant magnetic field produced by the current in a field coil and another permanent control magnet. { 'müv·iŋ ¦mag·nət 'vōlt,mēd·ər }

Moving Picture Experts Group See MPEG. { 'müv·iŋ 'pik·chər 'ek,spərts 'grüp }

moving-target indicator [ELECTR] A feature that limits the display of radar information primarily to moving targets; signals due to reflections from stationary objects are canceled by a memory circuit. Abbreviated MTI. { 'müv·iŋ ¦tär·gət 'in·də ,kād·ər }

MPEG [COMMUN] Standards for compression of digitized audio and video signals developed by the ISO/IEC JTC1/SC29 WG11; may also refer to the group itself (Moving Picture Experts Group). { 'em,peg }

MPEG-1 [COMMUN] Standards for compression of digitized audio and video signals that were developed by the Moving Picture Experts Group with relatively low-bit-rate systems in mind, such as video from a CD-ROM, and continue to be used, although most video applications currently use MPEG-2; they comprise ISO/IEC standards 11172-1 (systems), 11172-2 (video), 11172-3 (audio), 11172-4 (compliance testing), and 11172-5 (technical report). { 'em,peg 'wən }

MPEG-2 [COMMUN] Standards for compression of digitized audio and video signals that were developed by the Moving Picture Experts Group primarily for professional video applications, such as video production, and distribution and storage applications on media ranging from tape to DVD, and which form the basis of digital television systems; they comprise ISO/IEC standards 13818-1 (systems), 13818-2 (video), 13818-3 (audio), and 13818-4 (compliance). { 'em,peg 'tü }

MPEG-2 AAC [COMMUN] An advanced audio coder; a high-quality, low-bit-rate perceptual audio coding system. { 'em,peg 'tü ¦ā ¦ā ¦sē }

MPU *See* microprocessing unit.

MQ register [COMPUT SCI] Temporary-storage register whose contents can be transferred to or from, or swapped with, the accumulator. { ¦em ¦kyü 'rej·ə·stər }

MRAM *See* magnetic random access memory. { 'em,ram }

msb *See* most significant bit.

M-scan *See* M-display. { 'em ,skan }

M-scope *See* M-display. { 'em ,skōp }

MSI *See* magnetic source imaging medium-scale integration.

M signal *See* monochrome signal. { 'em ,sig·nəl }

MSS *See* mobile satellite service.

MTBF *See* mean time between failures.

MTI *See* moving-target indicator.

M-type backward-wave oscillator [ELECTR] A backward-wave oscillator in which focusing and interaction are through magnetic fields, as in a magnetron. Also known as M-type carcinotron; type-M carcinotron. { 'em ,tīp 'bak·wərd ¦wāv 'äs·ə,lād·ər }

M-type carcinotron *See* M-type backward-wave oscillator. { 'em ,tīp kär'sin·ə,trän }

MUF *See* maximum usable frequency.

mu factor [ELECTR] Ratio of the change in one electrode voltage to the change in another electrode voltage under the conditions that a specified current remains unchanged and that all other electrode voltages are maintained constant; a measure of the relative effect of the voltages on two electrodes upon the current in the circuit of any specified electrode. { 'myü ,fak·tər }

multiaccess computer [COMPUT SCI] A computer system in which computational and data resources are made available simultaneously to a number of users who access the system through terminal devices, normally on an interactive or conversational basis. { ¦məl·tē'ak,ses kəm,pyüd·ər }

multiaccess network *See* multiple-access network. { ¦məl·tē'ak,ses 'net,wərk }

multiaddress [COMPUT SCI] Referring to an instruction that has more than one address part. { ¦məl·tē'a,dres }

multianode tube [ELECTR] Electron tube having two or more main anodes and a single cathode. { ¦məl·tē'an,ōd ,tüb }

multiaperture reluctance switch [ELECTR] Two-aperture ferrite storage core which may be used to provide a nondestructive readout computer memory. { ¦məl·tē'ap·ə·chər ri'lək·təns ,swich }

multiaspect [COMPUT SCI] Pertaining to searches or systems which permit more than one aspect or facet, of information to be used in combination, one with the other to effect identifying or selecting operations. { ¦məl·tē'as,pekt }

multicavity klystron [ELECTR] A klystron in which there is at least one cavity between the input and output cavities, each of which remodulates the beam so that electrons are more closely bunched. { ¦məl·tē'kav·əd·ē 'klī,strän }

multicavity magnetron [ELECTR] A magnetron in which the circuit includes a plurality of cavities, generally cut into the solid cylindrical anode so that the mouths of the cavities face the central cathode. { ¦məl·tē'kav·əd·ē 'mag·nə,trän }

multicellular horn [ELECTROMAG] A cluster of horn antennas having mouths that lie in a common surface and that are fed from openings spaced one wavelength apart in one face of a common waveguide. [ENG ACOUS] A combination of individual horn loudspeakers having individual driver units or joined in groups to a common driver unit. Also known as cellular horn. { ¦məl·tē'sel·yə·lər 'hôrn }

multichannel communication [COMMUN] Communication in which there are two or more communication channels over the same path, such as a communication cable, or a radio transmitter which can broadcast on two different frequencies, either individually or simultaneously. { ¦məl·tē'chan·əl kə,myü·nə'kā·shən }

multichannel field-effect transistor [ELECTR] A field-effect transistor in which appropriate voltages are applied to the gate to control the space within the current flow channels. { ¦məl·tē'chan·əl 'fēld i¦fekt tran'zis·tər }

multichannel loading [COMMUN] Behavior of a multichannel communications system with all channels active. { ¦məl·tē'chan·əl 'lōd·iŋ }

multichannel telephone system [COMMUN] A telephone system in which two or more communications channels are carried over a single telephone cable or radio link. { ¦məl·tē'chan·əl 'tel·ə,fōn ,sis·təm }

multichip microcircuit [ELECTR] Microcircuit in which discrete, miniature, active electronic elements (transistor or diode chips) and thin-film

or diffused passive components or component clusters are interconnected by thermocompression bonds, alloying, soldering, welding, chemical deposition, or metallization. { 'məl·tē,chip 'mī·krō,sər·kət }

multicollector electron tube [ELECTR] An electron tube in which electrons travel to more than one electrode. { ¦məl·tē·kə¦lek·tər i'lek ,trän ,tüb }

multicomputer system [COMPUT SCI] A system consisting of more than one computer, usually under the supervision of a master computer, in which smaller computers handle input/output and routine jobs while the large computer carries out the more complex computations. { ¦məl·tē·kəm¦pyüd·ər ,sis·təm }

multicoupler [ELECTR] A device for connecting several receivers to one antenna and properly matching the impedances of the receivers to the antenna. { 'məl·tə,kəp·lər }

multidimensional Turing machine [COMPUT SCI] A variation of a Turing machine in which tapes are replaced by multidimensional structures. { ¦məl·tə·di'men·shən·əl 'tùr·iŋ mə,shēn }

multidrop line [COMMUN] A telephone pair which terminates at several locations. { 'məl·tē,dräp ,līn }

multielectrode tube [ELECTR] Electron tube containing more than three electrodes associated with a single electron stream. { ¦məl·tē·i'lek ,trōd ,tüb }

multielement array [ELECTROMAG] An antenna array having a large number of antennas. { ¦məl·tē'el·ə·mənt ə'rā }

multielement parasitic array [ELECTROMAG] Antennas consisting of an array of driven dipoles and parasitic elements, arranged to produce a beam of high directivity. { ¦məl·tē'el·ə·mənt ,par·ə'sid·ik ə,rā }

multielement vacuum tube [ELECTR] A vacuum tube which has one or more grids in addition to the cathode and plate electrodes. { ¦məl·tē'el·ə·mənt 'vak·yəm ,tüb }

multigrid tube [ELECTR] An electron tube having two or more grids between cathode and anode, as a tetrode or pentode. { 'məl·tə,grid ,tüb }

multigun tube [ELECTR] A cathode-ray tube having more than one electron gun. { 'məl·tə,gən ,tüb }

multihead Turing machine [COMPUT SCI] A variation of a Turing machine in which more than one head is allowed per tape. { 'məl·tē,hed 'tùr·iŋ mə,shēn }

multijob operation [COMPUT SCI] The concurrent or interleaved execution of job steps from more than one job. { 'məl·tē,jäb ,äp·ə'rā·shən }

multijunction solar cell [ELECTR] A solar cell made of two or more materials, each optimally efficient over a limited spectral range. Also known as multiple-junction solar cell. { ,məl·tē ¦jəŋk·shən ¦sō·lər 'sel }

multilayer board [ELECTR] A printed wiring board that contains circuitry on internal layers throughout the cross section of the board as well as on the external layers. { ,məl·tē,lā·ər 'bōrd }

multilayer optical storage [COMPUT SCI] An extension of optical disk storage technology to the third dimension by stacking data layers one above another, with each layer separated by a spacer region. { ,məl·tə¦lā·ər ¦äp·ti·kəl 'stór·ij }

multilevel address *See* indirect address. { ¦məl·tə 'lev·əl ə,dres }

multilevel indirect addressing [COMPUT SCI] A programming device whereby the address retrieved in the memory word may itself be an indirect address that points to another memory location, which in turn may be another indirect address, and so forth. { ¦məl·tə'lev·əl ,in·də,rekt ə'dres·iŋ }

multilevel transmission [COMMUN] Transmission of digital information in which three or more levels of voltage are recognized as meaningful, as 0,1,2 instead of simply 0,1. { ¦məl·tə'lev·əl tranz'mish·ən }

multiline appearances [COMMUN] **1.** The ability of a telephone to receive or originate additional voice or data calls at the terminal while it is still engaged in the primary voice call. **2.** The ability to bring additional parties to a primary telephone call. { ¦məl·tē'līn ə'pir·ən·səz }

multilist organization [COMPUT SCI] A chained file organization in which each segment is indexed. { 'məl·tē,list ,ór·gə·nə'zā·shən }

multimedia technology [COMPUT SCI] The synergistic union of digital video, audio, computer, information, and telecommunication technologies. { ¦məl·tə,mēd·ē·ə tek'näl·ə·jē }

multimeter *See* volt-ohm-milliammeter. { 'məl·tə ,mēd·ər *or* məl'tim·əd·ər }

multipactor [ELECTR] A high-power, high-speed microwave switching device in which a thin electron cloud is driven back and forth between two parallel plane surfaces in a vacuum by a radio-frequency electric field. { 'məl·tə,pak·tər }

multipass sort [COMPUT SCI] Computer program designed to sort more data than can be contained within the internal storage of a computer; intermediate storage, such as disk, tape, or drum, is required. { 'məl·tē,pas 'sórt }

multipath [COMMUN] A radio frequency reception condition in which a radio signal reaching a receiving antenna arrives by multiple paths due to reflections of the signal off of various surfaces in the environment. By traveling different distances to the receiver, the reflections arrive with different time delays and signal strengths. When multiplath conditions are great enough, analog reception of radio broadcasts is affected in a variety of ways, including stop-light fades, picket fencing, and distortion received audio. [ELECTROMAG] **1.** In radar, a propagation situation wherein the direct-path signal from radar to a target is interfered with by the reflected-path signal; usually refers to reflections from earth's surface. Both surveillance sensitivity and tracking accuracy, particularly at low elevation angles, are affected. **2.** *See* multipath transmission. { 'məl·tə,path }

multipath cancellation [COMMUN] Occurrence of essentially complete cancellation of radio signals

because of the relative amplitude and phase differences of the components arriving over separate paths. { 'məl·tə,path ,kan·sə'lā·shən }

multipath transmission [ELECTROMAG] The propagation phenomenon that results in signals reaching a radio receiving antenna by two or more paths, causing distortion in radio and ghost images in television. Also known as multipath. { 'məl·tə,path tranz'mish·ən }

multiple *See* parallel. { 'məl·tə·pəl }

multiple access [COMMUN] Multiplexing schemes by which multiple users who are geographically dispersed gain access to a shared telecommunications facility or channel. { ,məl·tə·pəl 'ak ,ses }

multiple-access computer [COMPUT SCI] A computer system whose facilities can be made available to a number of users at essentially the same time, normally through terminals, which are often physically far removed from the central computer and which typically communicate with it over telephone lines. { 'məl·tə·pəl ¦ak,ses kəm ,pyüd·ər }

multiple-access network [COMPUT SCI] A computer network that permits every computer on it to communicate with the network at any time during operation. Also known as multiaccess network. { 'məl·tə·pəl ¦ak,ses 'net,wərk }

multiple-access service [COMMUN] One of the services of the Tracking and Data Relay Satellite System, which provides simultaneous return-link service from as many as 20 low-earth-orbiting user spacecraft, with data rates up to 3 megabits per second for each user, and a time-shared forward-link service to the user spacecraft with a maximum data rate of 300 kilobits per second, one user at a time. Abbreviated MA service. { ,məl·tə·pəl 'ak,ses ,sər·vəs }

multiple accumulating registers [COMPUT SCI] Special registers capable of handling factors larger than one computer word in length. { 'məl·tə·pəl ə'kyü·myə,lād·iŋ 'rej·ə,stərz }

multiple-address code [COMPUT SCI] A computer instruction code in which more than one address or storage location is specified; the instruction may give the locations of the operands, the destination of the result, and the location of the next instruction. { 'məl·tə·pəl ¦a,dres ,kōd }

multiple-address computer [COMPUT SCI] A computer whose instruction contains more than one address, for example, an operation code and three addresses A, B, C, such that the content of A is multiplied by the content of B and the product stored in location C. { 'məl·tə·pəl ¦a,dres kəm ,pyüd·ər }

multiple-address instruction [COMPUT SCI] An instruction which has more than one address in a computer; the addresses give locations of other instructions, or of data or instructions that are to be operated upon. { 'məl·tə·pəl ¦a,dres in ,strək·shən }

multiple appearance [ELEC] Jack arrangement in telephone switchboards whereby a single-line circuit appears before two or more operators. { 'məl·tə·pəl ə'pir·əns }

multiple-beam antenna [ELECTROMAG] An antenna or antenna array which radiates several beams in different directions. { 'məl·tə·pəl ¦bēm an'ten·ə }

multiple computer operation [COMPUT SCI] The utilization of any one computer of a group of computers by means of linkages provided by multiplexor channels, all computers being linked through their channels or files. { 'məl·tə·pəl kəm'pyüd·ər ,äp·ə,rā·shən }

multiple-contact switch *See* selector switch. { 'məl·tə·pəl ¦kän,takt ,swich }

multiple decay *See* branching. { 'məl·tə·pəl di'kā }

multiple disintegration *See* branching. { 'məl·tə·pəl di,sin·tə'grā·shən }

multiple-frequency-shift keying [COMMUN] A modulation scheme in which a number of carrier frequencies (2, 4, 8, and so forth) are transmitted according to a group of consecutive data bits (n bits producing 2^n frequencies). Abbreviated MFSK. { 'məl·tə·pəl ¦frē·kwən·sē ¦shift ,kē·iŋ }

multiple-function chip *See* large-scale integrated circuit. { 'məl·tə·pəl ¦fəŋk·shən ,chip }

multiple-instruction-stream, multiple-data-stream *See* MIMD. { ¦məl·tə·pəl in'strək·shən ,strēm ¦məl·tə·pəl 'dad·ə ,strēm }

multiple jacks [ELEC] Series of jacks with tip, ring, and sleeve, respectively connected in parallel, and appearing in different panels of the face equipment of a telephone exchange. { 'məl·tə·pəl 'jaks }

multiple-junction solar cell *See* multijunction solar cell. { ¦məl·tə·pəl ¦jəŋk·shən ¦sō·lər ,sel }

multiple-key access [COMPUT SCI] A technique for locating stored data in a computer system by using the values contained in two or more separate key fields. { 'məl·tə·pəl ¦kē 'ak,ses }

multiple lamp holder [ELEC] A device that can be inserted in a lamp holder to act as two or more lamp holders. Also known as current tap. { 'məl·tə·pəl 'lamp ,hōl·dər }

multiple-length arithmetic [COMPUT SCI] Arithmetic performed by a computer in which two or more machine words are used to represent each number in the calculations, usually to achieve higher precision in the result. { 'məl·tə·pəl ¦leŋkth ə'rith·mə,tik }

multiple-length number [COMPUT SCI] A number having two or more times as many digits as are ordinarily used in a given computer. { 'məl·tə·pəl ¦leŋkth 'nəm·bər }

multiple-length working [COMPUT SCI] Any processing of data by a computer in which two or more machine words are used to represent each data item. { 'məl·tə·pəl ¦leŋkth 'wərk·iŋ }

multiple modulation [COMMUN] A succession of modulating processes in which the modulated wave from one process becomes the modulating wave for the next. Also known as compound modulation. { 'məl·tə·pəl ,mäj·ə'lā·shən }

multiple module access [COMPUT SCI] Device which establishes priorities in storage access in a multiple computer environment. { 'məl·tə·pəl ¦mäj·yül ,ak,ses }

multiple precision arithmetic [COMPUT SCI] Method of increasing the precision of a result by increasing the length of the number to encompass two or more computer words in length. { 'məl·tə·pəl prə|sizh·ən ə'rith·mə,tik }

multiple programming [COMPUT SCI] The execution of two or more operations simultaneously. { 'məl·tə·pəl 'prō,gram·iŋ }

multiple-purpose tester *See* volt-ohm-milliammeter. { 'məl·tə·pəl ¦pər·pəs 'tes·tər }

multiple resonance [ELEC] Two or more resonances at different frequencies in a circuit consisting of two or more coupled circuits which are resonant at slightly different frequencies. { 'məl·tə·pəl 'rez·ən·əns }

multiple switchboard [ELEC] Manual telephone switchboard in which each subscriber line is attached to two or more jacks, to be within reach of several operators. { 'məl·tə·pəl 'swich,bȯrd }

multiple target generator [ELECTR] An electronic countermeasures device that produces several false responses in a hostile radar set. { 'məl·tə·pəl 'tär·gət ,jen·ə,rād·ər }

multiple-tuned antenna [ELECTROMAG] Low-frequency antenna having a horizontal section with a multiplicity of tuned vertical sections. { 'məl·tə·pəl ¦tünd an'ten·ə }

multiple twin quad [ELEC] Quad cable in which the four conductors are arranged in two twisted pairs, and the two pairs twisted together. { 'məl·tə·pəl 'twin 'kwäd }

multiple-unit semiconductor device [ELECTR] Semiconductor device having two or more seats of electrodes associated with independent carrier streams. { 'məl·tə·pəl ¦yü·nət 'sem·i·kən,dək·tər di,vīs }

multiple-unit steerable antenna *See* musa. { 'məl·tə·pəl ¦yü·nət 'stir·ə·bəl an'ten·ə }

multiple-unit tube *See* multiunit tube. { 'məl·tə·pəl ¦yü·nət 'tüb }

multiple winding [ELEC] A winding composed of several circuits connected in parallel. { 'məl·tə·pəl 'wīnd·iŋ }

multiplexer [ELECTR] A device for combining two or more signals, as for multiplex, or for creating the composite color video signal from its components in color television. Also spelled multiplexor. { 'məl·tə,plek·sər }

multiplexing [COMMUN] **1.** A set of techniques that enable the sharing of the usable electromagnetic spectrum of a telecommunications channel (the channel pass-band) among multiple users for the transfer of individual information streams. **2.** In particular, the case in which the user information streams join at a common access point to the channel. { 'məl·tə,pleks·iŋ }

multiplex mode [COMPUT SCI] The utilization of differences in operating speeds between a computer and transmission lines; the multiplexor channel scans each line in sequence, and any transmitted pulse on a line is assembled in an area reserved for this line; consequently, a number of users can be handled by the computer simultaneously. Also known as multiplexor channel operation. { 'məl·tə,pleks ,mōd }

multiplex operation [COMMUN] Simultaneous transmission of two or more messages in either or both directions over a carrier channel. { 'məl·tə,pleks ,äp·ə'rā·shən }

multiplexor *See* multiplexer. { 'məl·tə,plek·sər }

multiplexor channel operation *See* multiplex mode. { 'məl·tə,plek·sər ¦chan·əl ,äp·ə,rā·shən }

multiplexor terminal unit [COMPUT SCI] Device which permits a large number of data transmission lines to access a single computer. { 'məl·tə ,plek·sər 'tər·mən·əl ,yü·nət }

multiplex transmission [COMMUN] The simultaneous transmission of two or more programs or signals over a single radio-frequency channel, such as by time division, frequency division, code division, or phase division. { 'məl·tə,pleks tranz'mish·ən }

multiplication [ELECTR] An increase in current flow through a semiconductor because of increased carrier activity. { ,məl·tə·pli'kā·shən }

multiplication table [COMPUT SCI] In certain computers, a part of memory holding a table of numbers in which the computer looks up values in order to perform the multiplication operation. { ,məl·tə·pli'kā·shən ,tā·bəl }

multiplication time [COMPUT SCI] The time required for a computer to perform a multiplication; for a binary number it will be equal to the total of all the addition times and all the shift times involved in the multiplication. { ,məl·tə·pli'kā·shən ,tīm }

multiplicative congruential generator [COMPUT SCI] A congruential generator in which the constant b in the generating formula is equal to zero. { ,məl·tə¦plik·əd·iv ,kän,grü'en·chəl 'jen·ə,rād·ər }

multiplier [ELEC] A resistor used in series with a voltmeter to increase the voltage range. Also known as multiplier resistor. [ELECTR] **1.** A device that has two or more inputs and an output that is a representation of the product of the quantities represented by the input signals;voltages are the quantities commonly multiplied. **2.** *See* electron multiplier; frequency multiplier. { 'məl·tə,plī·ər }

multiplier field [COMPUT SCI] The area reserved for a multiplication, equal to the length of multiplier plus multiplicand plus one character. { 'məl·tə ,plī·ər ,fēld }

multiplier phototube [ELECTR] A phototube with one or more dynodes between its photocathode and the output electrode; the electron stream from the photocathode is reflected off each dynode in turn, with secondary emission adding electrons to the stream at each reflection. Also known as electron-multiplier phototube; photoelectric electron-multiplier tube; photomultiplier; photomultiplier tube. { 'məl·tə,plī·ər 'fōd·ō,tüb }

multiplier-quotient register [COMPUT SCI] A register equal to two words in length in which the quotient is developed and in which the multiplier is entered for multiplication. { 'məl·tə,plī·ər 'kwō·shənt ,rej·ə·stər }

multiplier resistor *See* multiplier. { 'məl·tə,plī·ər ri,zis·tər }

multiplier traveling-wave photodiode [ELECTR] Photodiode in which the construction of a traveling-wave tube is combined with that of a multiplier phototube to give increased sensitivity. { 'məl·tə,plī·ər ¦trav·ə·liŋ 'wāv ,fōd·ō'dī,ōd }

multiplier tube [ELECTR] Vacuum tube using secondary emission from a number of electrodes in sequence to obtain increased output current; the electron stream is reflected, in turn, from one electrode of the multiplier to the next. { 'məl·tə ,plī·ər ,tüb }

multipling [COMMUN] Use of multidrop lines to provide for changes in telephone service patterns or requirements; unused terminals afford convenient access to wiretappers. { 'məl·tə·pliŋ }

multiply defined symbol [COMPUT SCI] Common assembler or compiler error printout indicating that a label has been used more than once. { 'məl·tə·plē di¦fīnd 'sim·bəl }

multipoint line [COMMUN] A line which is shared by two or more different tributary stations. { 'məl·tə,pȯint ,līn }

multiport memory [COMPUT SCI] A memory shared by many processors to communicate among themselves. { 'məl·tə,pȯrt 'mem·rē }

multiprecision arithmetic [COMPUT SCI] A form of arithmetic similar to double precision arithmetic except that two or more words may be used to represent each number. { ¦məl·tə·prə'sizh·ən ə'rith·mə,tik }

multiprocessing [COMPUT SCI] Carrying out of two or more sequences of instructions at the same time in a computer. { ,məl·tə'prā,ses·iŋ }

multiprocessing system *See* multiprocessor. { ,məl·tə'prā,ses·iŋ ,sis·təm }

multiprocessor [COMPUT SCI] A data-processing system that can carry out more than one program, or more than one arithmetic operation, at the same time. Also known as multiprocessing system. { ,məl·tə'prä,ses·ər }

multiprocessor interleaving [COMPUT SCI] Technique used to speed up processing time; by splitting banks of memory each with x microseconds access time and accessing each one in sequence $1/n$-th of a cycle later, a reference to memory can be had every x/n microseconds; this speed is achieved at the cost of hardware complexity. { ,məl·tə'prä,ses·ər ,in·tər'lēv·iŋ }

multiprogramming [COMPUT SCI] The interleaved execution of two or more programs by a computer, in which the central processing unit executes a few instructions from each program in succession. { ,məl·tə'prō,gram·iŋ }

multiprogramming executive control [COMPUT SCI] Control program structure required to handle multiprogramming with either a fixed or a variable number of tasks. { ,məl·tə'prō,gram·iŋ ig¦zek·yəd·iv kən'trōl }

multirole programmable device [CONT SYS] A device that contains a programmable memory to store data on positioning robots and sequencing their motion. { 'məl·tə,rōl prō¦gram·ə·bəl di'vīs }

multisegment magnetron [ELECTR] Magnetron with an anode divided into more than two segments, usually by slots parallel to its axis. { 'məl·tə,seg·mənt 'mag·nə,trän }

multispeed motor [ELEC] An induction motor that can rotate at any one of two or more speeds, independent of the load. { 'məl·tə,spēd 'mōd·ər }

multistable circuit [ELECTR] A circuit having two or more stable operating conditions. { 'məl·tə ,stā·bəl 'sər·kət }

multistage amplifier *See* cascade amplifier. { 'məl·tē,stāj 'am·plə,fī·ər }

multistatic radar [ENG] Radar in which successive antenna lobes are sequentially engaged to provide a tracking capability without physical movement of the antenna. { 'məl·tē,stad·ik 'rā ,där }

multistation [COMMUN] Pertaining to a network in which each station can communicate with each of the other stations. { 'məl·tē,stā·shən }

multistator watt-hour meter [ELEC] An induction type of watt-hour meter in which several stators exert a torque on the rotor. { 'məl·tē,stād·ər 'wät ,aůr ,mēd·ər }

multistrip coupler [ELECTR] A series of parallel metallic strips placed on a surface acoustic wave filter between identical apodized interdigital transducers; it converts the spatially nonuniform surface acoustic wave generated by one transducer into a spatially uniform wave received at the other transducer, and helps to reject spurious bulk acoustic modes. { 'məl·tə,strip 'kəp·lər }

multisync monitor [COMPUT SCI] A video display monitor that automatically adjusts to the synchronization frequency of the video source from which it is receiving signals. { ¦məl·ti,siŋk 'män·ə·tər }

multisystem coupling [COMPUT SCI] The electronic connection of two or more computers in proximity to make them act as a single logical machine. { 'məl·tə,sis·təm 'kəp·liŋ }

multisystem network [COMPUT SCI] A data communications network that has two or more host computers with which the various terminals in the system can communicate. { 'məl·tə,sis·təm 'net,wərk }

multitape Turing machine [COMPUT SCI] A variation of a Turing machine in which more than one tape is permitted, each tape having its own read-write head. { 'məl·tē,tāp 'tůr·iŋ mə,shēn }

multitasking [COMPUT SCI] The simultaneous execution of two or more programs by a single central processing unit. { ¦məl·tē'task·iŋ }

multitask operation [COMPUT SCI] A sophisticated form of multijob operation in a computer which allows a single copy of a program module to be used for more than one task. { ¦məl·tē'task ,äp·ə'rā·shən }

multithreading [COMPUT SCI] A processing technique that allows two or more of the same type of transaction to be carried out simultaneously. { ¦məl·tə'thred·iŋ }

multitrack operation [COMPUT SCI] The selection of the next read/write head in a cylinder, usually indicated by bit zero of the operation code in the channel command word. { ¦məl·tē'trak ,äp·ə'rā·shən }

multitrack recording system [ENG] Recording system which provides two or more recording paths on a medium, which may carry either related or unrelated recordings in common time relationship. { ¦məl·tē'trak ri'kȯrd·iŋ ˌsis·təm }

multiturn potentiometer [ELEC] A precision wirewound potentiometer in which the resistance element is formed into a helix, generally having from 2 to 10 turns. { 'məl·tēˌtərn pəˌten·chē'äm·əd·ər }

multiunit tube [ELECTR] Electron tube containing within one glass or metal envelope, two or more groups of electrodes, each associated with separate electron streams. Also known as multiple-unit tube. { ¦məl·tē¦yü·nət 'tüb }

multiuser system [COMPUT SCI] A computer system with multiple terminals, enabling several users, each at their own terminal, to use the computer. { ¦məl·tē¦yü·zər 'sis·təm }

multivariable system [CONT SYS] A dynamical system in which the number of either inputs or outputs is greater than 1. { ¦məl·tē'ver·ē·ə·bəl ˌsis·təm }

multivibrator [ELEC] Type of dc-to-dc up-converter. [ELECTR] An automatic device for analyzing a number of dust samples that might be collected by spacecraft on the moon, Mars, and other planets, to detect the presence of microscopic organisms with a multiplier phototube that measures the fluorescence given off. { 'məl·təˌvād·ər }

multivibrator [ELECTR] A relaxation oscillator using two tubes, transistors, or other electron devices, with the output of each coupled to the input of the other through resistance-capacitance elements or other elements to obtain in-phase feedback voltage. { ˌməl·tə'vī,brād·ər }

multivolume file [COMPUT SCI] A file that consists of more than one physical unit of storage medium. { ¦məl·tē¦väl·yəm 'fīl }

multiway merge [COMPUT SCI] A computer operation in which three or more lists are merged into a single list. { 'məl·tēˌwā 'mərj }

Murray code [COMMUN] A binary code with five binary digits per letter which was developed to be used with a typewriterlike device which would punch holes in paper tape, and is now the basis of the widely used CCIT 2 code. { 'mər·ē ˌkōd }

Murray loop test [ELEC] A method of localizing a fault in a cable by replacing two arms of a Wheatstone bridge with a loop formed by the cable under test and a good cable connected to the far end of the defective cable. { 'mər·ē 'lüp ˌtest }

musa [ELECTROMAG] An electrically steerable receiving antenna whose directional pattern can be rotated by varying the phases of the contributions of the individual units. Derived from multiple-unit steerable antenna. { 'myü·sə }

musical instrument digital interface [COMPUT SCI] **1.** The digital standard for connecting computers, musical instruments, and synthesizers. **2.** A compression format for encoding music. Abbreviated MIDI. { ˌmyü·zi·kəl ¦in·strə·mənt ˌdij·ə·dəl 'in·tərˌfās }

muting circuit [ELECTR] **1.** Circuit which cuts off the output of a receiver when no radio-frequency carrier greater than a predetermined intensity is reaching the first detector. **2.** Circuit for making a receiver insensitive during operation of its associated transmitter. { 'myüd·iŋ ˌsər·kət }

muting switch [ELEC] **1.** A switch used in connection with automatic tuning systems to silence the receiver while tuning from one station to another. **2.** A switch used to ground the output of a phonograph pickup automatically while a record changer is in its change cycle. { 'myüd·iŋ ˌswich }

mutual admittance [ELEC] For two meshes of a network carrying alternating current, the ratio of the complex current in one mesh to the complex voltage in the other, when the voltage in all meshes besides these two is 0. { 'myü·chə·wəl ad'mit·əns }

mutual branch *See* common branch. { 'myü·chə·wəl 'branch }

mutual capacitance [ELEC] The accumulation of charge on the surfaces of conductors of each of two circuits per unit of potential difference between the circuits. { 'myü·chə·wəl kə'pas·əd·əns }

mutual conductance *See* transconductance. { 'myü·chə·wəl kən'dək·təns }

mutual deadlock [COMPUT SCI] A condition in which deadlocked tasks are awaiting resource assignments, and each task on a list awaits release of a resource held by the following task, with the last task awaiting release of a resource held by the first task. Also known as circular wait. { 'myü·chə·wəl 'ded,läk }

mutual impedance [ELEC] For two meshes of a network carrying alternating current, the ratio of the complex voltage in one mesh to the complex current in the other, when all meshes besides the latter one carry no current. { 'myü·chə·wəl im'pēd·əns }

mutual interference [COMMUN] Interference from two or more electrical or electronic systems which affects these systems on a reciprocal basis. { 'myü·chə·wəl ˌin·tər'fir·əns }

mV *See* millivolt.

MV *See* megavolt.

MWYE *See* megawatt year of electricity.

myriametric waves [ELECTROMAG] Electromagnetic waves having wavelengths between 10 and 100 kilometers, corresponding to the very low frequency band. { ¦mir·ē·ə¦me·trik 'wāvz }

N

nacelle [ELEC] An enclosure containing the electric generating equipment in a wind-energy conversion system. { nə'sel }

NAK *See* negative acknowledgement. { nak *or* ˌen ˌā'kā }

nancy receiver *See* infrared receiver. { 'nan·sē riˌsēv·ər }

NAND circuit [ELECTR] A logic circuit whose output signal is a logical 1 if any of its inputs is a logical 0, and whose output signal is a logical 0 if all of its inputs are logical 1. { 'nandˌsər·kət }

nanoelectronics [ELECTR] The technology of electronic devices whose dimensions range from atoms up to 100 nanometers. { ˌnan·ō·iˌlek'trän·iks }

nanotechnology [ENG] **1.** Systems for transforming matter, energy, and information that are based on nanometer-scale components with precisely defined molecular features. **2.** Techniques that produce or measure features less than 100 nanometers in size. { ¦nan·ō·tek'näl·ə·jē }

NAPLPS *See* North American presentation-level protocol syntax. { 'napˌlips }

narrow-band amplifier [ELECTR] An amplifier which increases the magnitude of signals over a band of frequencies whose bandwidth is small compared to the average frequency of the band. { 'nar·ō ¦band 'am·pləˌfī·ər }

narrow-band frequency modulation [COMMUN] Frequency-modulated broadcasting system used primarily for two-way voice communication, typically having a maximum deviation of 15 kilohertz or less. { 'nar·ō ¦band 'frē·kwən·sē ˌmäj·ə'lā·shən }

narrow-band-pass filter [ELECTR] A band-pass filter in which the band of frequencies transmitted by the filter has a bandwidth which is small compared to the average frequency of the band. { 'nar·ō ¦banˌpas ˌfil·tər }

narrow-band path [COMMUN] A communications path having a bandwith typically of less than 20 kilohertz. { 'nar·ō ¦band 'path }

narrow-beam antenna [ELECTROMAG] An antenna which radiates most of its power in a cone having a radius of only a few degrees. { 'nar·ō ¦bēm an'ten·ə }

narrow-sector recorder [ELECTR] A radio direction finder with which atmospherics are received from a limited sector related to the position of the antenna; this antenna is usually rotated continuously and the bearings of the atmospherics recorded automatically. { 'nar·ō ¦sek·tər ri'kȯrd·ər }

N-ary code [COMMUN] Code employing N distinguishable types of code elements. { 'en·ə·rē ˌkōd }

N-ary pulse-code modulation [COMMUN] Pulse-code modulation in which the code for each element consists of any one of N distinguishable types of elements. { 'en·ə·rē 'pəls ˌkōd ˌmäj·ə'lā·shən }

National Radio Systems Committee [COMMUN] Abbreviated NRSC. A technical standards setting body of the radio broadcasting industry, cosponsored by the Consumer Electronics Association (CEA) and the National Association of Broadcasters (NAB). { ¦nash·ən·əl ¦rād·ē,ō ¦sis·təmz kəˌmid·ē }

National Television Systems Committee [COMMUN] Abbreviated NTSC. The organization that developed the transmission standard for color television broadcasting in the United States, and the black-and-white system that preceded it. The NTSC color system was adopted by the Federal Communications Commission in 1953 and remains in the FCC Rules today. NTSC was also adopted in a number of other countries around the world for distribution of color video programming. The NTSC standard provides for a screen density of 525 scan lines per picture. For U.S. television service, NTSC has a field repetition rate of just under 60 fields/second, and a frame rate of just under 30 frames/second; one frame is composed of two fields for interlace scanning systems. { ¦nash·ən·əl 'tel·əˌvizh·ən ¦sis·təmz kəˌmid·ē }

native language [COMPUT SCI] Machine language that is executed by the computer for which it is specifically designed, in contrast to a computer using an emulator. { 'nād·iv 'laŋ·gwij }

native mode [COMPUT SCI] **1.** The mode of operation of a software product that is being used on a computer for which it was specifically designed, without use of an emulator. **2.** The mode of operation of a device that is carrying out the function for which it was designed and is not emulating another device. { 'nād·iv 'mōd }

natural antenna frequency [ELECTROMAG] Lowest resonant frequency of an antenna without

added inductance or capacitance. { 'nach·rəl an'ten·ə ,frē·kwən·sē }

natural binary coded decimal system [COMPUT SCI] A particular binary coded decimal system that uses the first ten binary numbers in sequence to represent the digits 0 through 9. { 'nach·rəl 'bī,ner·ē ¦kōd·əd ¦des·məl ,sis·təm }

natural frequency [ELECTR] The lowest resonant frequency of an antenna, circuit, or component. { 'nach·rəl 'frē·kwən·sē }

natural function generator *See* analytical function generator. { 'nach·rəl 'fəŋk·shən ,¡en·ə,rād·ər }

natural interference [COMMUN] Electromagnetic interference arising from natural terrestrial phenomena (called atmospheric interference), or electromagnetic interference caused by natural disturbances originating outside the atmosphere of the earth (called galactic and solar noise). { 'nach·rəl ,in·tər'fir·əns }

natural language [COMPUT SCI] A computer language whose rules reflect and describe current rather than prescribed usage; it is often loose and ambiguous in interpretation, meaning different things to different hearers. { 'nach·rəl 'laŋ·gwij }

natural language interaction [COMPUT SCI] The interaction of users with computer systems through the medium of natural languages. { 'nach·rəl ¦laŋ·gwij ,in·tər'ak·shən }

natural language processing [COMPUT SCI] Computer analysis and generation of natural language text; encompasses natural language interaction and natural language text processing. { 'nach·rəl ¦laŋ·gwij 'prä,ses·iŋ }

natural language text processing [COMPUT SCI] Computer processing of natural language text into a more useful form, as in automatic text translation or text summarization. { 'nach·rəl ¦laŋ·gwij 'tekst ,prä,ses·iŋ }

natural wavelength [ELECTROMAG] Wavelength corresponding to the natural frequency of an antenna or circuit. { 'nach·rəl 'wāv,leŋkth }

navigation [COMPUT SCI] In a database management system, the techniques provided for locating information within the system. { ,nav·ə'gā·shən }

navigation receiver [ELECTR] An electronic device that determines a ship's position by receiving and comparing radio signals from transmitters at known locations. { ,nav·ə'gā·shən ri ,sē·vər }

n-channel [ELECTR] A conduction channel formed by electrons in an *n*-type semiconductor, as in an *n*-type field-effect transistor. { 'en ,chan·əl }

n-channel metal-oxide semiconductor *See* NMOS. { ¦en ,chan·əl ,med·əl ¦äk,sīd 'sem·i·kən ,dək·tər }

N curve [ELECTR] A plot of voltage against current for a negative-resistance device; its slope is negative for some values of current or voltage. { 'en ,kərv }

N-display [ELECTR] A radar display format in which a trace-deflecting pulse can be moved along the vertical range axis of an L-display to assist an operator in determining and reporting the range of a target. Also known as N-indicator; N-scan; N-scope. { 'en di,splā }

NDRO *See* nondestructive readout.

NEA material *See* negative-electron affinity material. { ¦en¦ē'ā mə,tir·ē·əl }

near-end crosstalk [COMMUN] A type of interference that may occur at carrier telephone repeater stations when output signals of one repeater leak into the same end of the other repeater. { 'nir ,end 'krós,tók }

near field [ELECTROMAG] The electromagnetic field that exists within one wavelength of a source of electromagnetic radiation, such as a transmitting antenna. { 'nir ,fēld }

near-infrared radiation [ELECTROMAG] Infrared radiation having a relatively short wavelength, between 0.75 and about 2.5 micrometers (some scientists place the upper limit from 1.5 to 3 micrometers), at which radiation can be detected by photoelectric cells, and which corresponds in frequency range to the lower electronic energy levels of molecules and semiconductors. Also known as photoelectric infrared radiation. { 'nir ,in·frə'red ,rād·ē'ā·shən }

necessary bandwidth [COMMUN] For a given class of emission, the minimum value of the occupied bandwidth sufficient to ensure the transmission of information at the rate and with the quality required for the system employed, under specified conditions. { 'nes·ə,ser·ē 'band ,width }

needle gap [ELECTR] Spark gap in which the electrodes are needle points. { 'nēd·əl ,gap }

needle scratch *See* surface noise. { 'nēd·əl ,skrach }

needle test point [ELEC] A sharp steel probe connected to a test cord for making contact with a conductor. { 'nēd·əl 'test ,póint }

negative [ELEC] Having a negative charge. { 'neg·əd·iv }

negative acknowledgement [COMPUT SCI] In a data communications network, a control character returned from a receiving machine to a sending machine to indicate the presence of errors in the preceding block of data. Abbreviated NAK. { 'neg·əd·iv ik'näl·ij·mənt }

negative booster [ELEC] Booster used in connection with a ground-return system to reduce the difference of potential between two points on the grounded return. { 'neg·əd·iv 'bü·stər }

negative charge [ELEC] The type of charge which is possessed by electrons in ordinary matter, and which may be produced in a resin object by rubbing with wool. Also known as negative electricity. { 'neg·əd·iv 'chärj }

negative conductor [ELEC] The conductor that is connected to the negative terminal of a voltage source. { 'neg·əd·iv kən'dək·tər }

negative effective mass amplifiers and generators [ELECTR] Class of solid-state devices for broad-band amplification and generation of electrical waves in the microwave region; these devices use the property of the effective masses of charge carriers in semiconductors becoming negative with sufficiently high kinetic energies. { 'neg·əd·iv i'fek·tiv 'mas 'am·plə ,fī·ərz ən 'jen·ə,rād·ərz }

negative electricity *See* negative charge. { 'neg·əd·iv i,lek'tris·əd·ē }

negative electrode *See* cathode. { 'neg·əd·iv i'lek ,trōd }

negative electron-affinity material [ELECTR] A material, such as gallium phosphide, whose surface has been treated with a substance, such as cesium, so that the surface barrier is reduced, band-bending occurs so that the top of the conduction band lies above the vacuum level, and the electron affinity of the substance in negative. Abbreviated NEA material. { 'neg·əd·iv i'lek,trän ə'fin·əd·ē mə,tir·ē·əl }

negative feedback [CONT SYS] Feedback in which a portion of the output of a circuit, device, or machine is fed back 180° out of phase with the input signal, resulting in a decrease of amplification so as to stabilize the amplification with respect to time or frequency, and a reduction in distortion and noise. Also known as inverse feedback; reverse feedback; stabilized feedback. { 'neg·əd·iv 'fēd,bak }

negative glow [ELECTR] The luminous flow in a glow-discharge cold-cathode tube occurring between the cathode dark space and the Faraday dark space. { 'neg·əd·iv 'glō }

negative-grid generator [ELECTR] Conventional oscillator circuit in which oscillation is produced by feedback from the plate circuit to a grid which is normally negative with respect to the cathode, and which is designed to operate without drawing grid current at any time. { 'neg·əd·iv ¦grid 'jen·ə ,rād·ər }

negative-grid thyratron [ELECTR] A thyratron with only one grid, which serves to prevent the flow of current until its potential relative to the cathode is made less negative than a certain critical value. { 'neg·əd·iv ¦grid 'thī·rə,trän }

negative impedance [ELECTR] An impedance such that when the current through it increases, the voltage drop across the impedance decreases. { 'neg·əd·iv im'pēd·əns }

negative-impedance repeater [ELECTR] A telephone repeater that provides an effective gain for voice-frequency signals by insertion into the line of a negative impedance that cancels out line impedances responsible for transmission losses. { 'neg·əd·iv im¦pēd·əns ri'pēd·ər }

negative logic [ELECTR] Logic circuitry in which the more positive voltage (or current level) represents the 0 state; the less positive level represents the 1 state. { 'neg·əd·iv ,läj·ik }

negative modulation [ELECTR] **1.** Television modulation system in which an increase in scene brightness corresponds to a decrease in amplitude-modulated transmitter power; used in United States analog television transmitters. **2.** Modulation in which an increase in brightness corresponds to a decrease in the frequency of a frequency-modulated facsimile transmitter. Also known as negative transmission. { 'neg·əd·iv ,mäj·ə'lā·shən }

negative phase sequence [ELEC] The phase sequence that corresponds to the reverse of the normal order of phases in a polyphase system. { 'neg·əd·iv ¦fāz 'sē·kwəns }

negative-phase-sequence relay [ELEC] Relay which functions in conformance with the negative-phase-sequence component of the current, voltage, or power of the circuit. { 'neg·əd·iv ¦fāz ¦sē·kwəns 'rē,lā }

negative picture phase [ELECTR] The video signal phase in which the signal voltage swings in a negative direction for an increase in brilliance. { 'neg·əd·iv 'pik·chər ,fāz }

negative plate [ELEC] The internal plate structure that is connected to the negative terminal of a storage battery. Also known as negative electrode. { 'neg·əd·iv 'plāt }

negative potential [ELEC] An electrostatic potential which is lower than that of the ground, or of some conductor or point in space that is arbitrarily assigned to have zero potential. { 'neg·əd·iv pə'ten·chəl }

negative resistance [ELECTR] The resistance of a negative-resistance device. { 'neg·əd·iv ri'zis·təns }

negative-resistance device [ELECTR] A device having a range of applied voltages within which an increase in this voltage produces a decrease in the current. { 'neg·əd·iv ri¦zis·təns di'vīs }

negative-resistance oscillator [ELECTR] An oscillator in which a parallel-tuned resonant circuit is connected to a vacuum tube so that the combination acts as the negative resistance needed for continuous oscillation. { 'neg·əd·iv ri¦zis·təns 'äs·ə,lād·ər }

negative-resistance repeater [ELECTR] Repeater in which gain is provided by a series negative resistance or a shunt negative resistance, or both. { 'neg·əd·iv ri¦zis·təns ri'pēd·ər }

negative terminal [ELEC] The terminal of a battery or other voltage source that has more electrons than normal; electrons flow from the negative terminal through the external circuit to the positive terminal. { 'neg·əd·iv 'tər·mən·əl }

negative thermion *See* thermoelectron. { 'neg·əd·iv 'thər·mē,än }

negative-transconductance oscillator [ELECTR] Electron-tube oscillator in which the output of the tube is coupled back to the input without phase shift, the phase condition for oscillation being satisfied by the negative transconductance of the tube. { 'neg·əd·iv ,tranz·kən'dək·təns 'äs·tə,lād·ər }

negative transmission *See* negative modulation. { 'neg·əd·iv tranz'mish·ən }

negatron *See* dynatron. { 'neg·ə,trän }

negentropy *See* information content. { nə'gen ·trə·pē }

neon glow lamp [ELECTR] A glow lamp containing neon gas, usually rated between $\frac{1}{25}$ and 3 watts, and producing a characteristic red glow; used as an indicator light and electronic circuit component. { 'nē,än 'glō ,lamp }

neon oscillator [ELECTR] Relaxation oscillator in which a neon tube or lamp serves as the switching element. { 'nē,än 'äs·ə,lād·ər }

neon tube [ELECTR] An electron tube in which neon gas is ionized by the flow of electric current through long lengths of gas tubing, to produce a luminous red glow discharge; used chiefly in outdoor advertising signs. { 'nē,än ,tüb }

Nernst bridge [ELEC] A four-arm bridge containing capacitors instead of resistors, used for measuring capacitance values at high frequencies. { 'nernst ,brij }

Nernst glower *See* Nernst lamp. { 'nernst ,glō·ər }

Nernst lamp [ELEC] An electric lamp consisting of a short, slender rod of zirconium oxide in open air, heated to brilliant white incandescence by current. Also known as Nernst glower. { 'nernst ,lamp }

nesistor [ELECTR] A negative-resistance semiconductor device that is basically a bipolar field-effect transistor. { ne'zis·tər }

nest [COMPUT SCI] To include data or subroutines in other items of a similar nature with a higher hierarchical level so that it is possible to access or execute various levels of data or routines recursively. { nest }

nesting [COMPUT SCI] **1.** Inclusion of a routine wholly within another routine. **2.** Inclusion of a DO statement within a DO statement in FORTRAN. { 'nest·iŋ }

nesting storage *See* push-down storage. { 'nest·iŋ 'stȯr·ij }

net [COMMUN] A number of communication stations equipped for communicating with each other, often on a definite time schedule and in a definite sequence. { net }

net call sign [COMMUN] A call sign that represents all stations within a net. { 'net 'kȯl ,sīn }

net control station [COMMUN] Communications station having the responsibility of clearing traffic and exercising circuit discipline within a net. { 'net kən'trōl ,stā·shən }

net loss [COMMUN] The ratio of the power at the input of a transmission system to the power at the output; expressed in nepers, it is one-half the natural logarithm of this ratio, and in decibels it is 10 times the common logarithm of the ratio. { 'net 'lȯs }

network [COMMUN] A number of radio or television broadcast stations connected by fiber-optic cable, coaxial cable, radio, or wire lines, so all stations can broadcast the same program simultaneously. [COMPUT SCI] *See* computer network. [ELEC] A collection of electric elements, such as resistors, coils, capacitors, and sources of energy, connected together to form several interrelated circuits. Also known as electric network. { 'net,wərk }

network admittance [ELEC] The admittance between two terminals of a network under specified conditions. { 'net,wərk ad'mit·əns }

network analysis [ELEC] Derivation of the electrical properties of a network, from its configuration, element values, and driving forces. [ENG] An analytic technique used during project planning to determine the sequence of activities and their interrelationship within the network of activities that will be required by the project. Also known as network planning. { 'net,wərk ə'nal·ə·səs }

network analyzer [COMPUT SCI] An analog computer in which networks are used to simulate power line systems or physical systems and obtain solutions to various problems before the systems are actually built. { 'net,wərk 'an·ə ,līz·ər }

network architecture [COMMUN] The high-level design of a communications system, including the choice of hardware, software, and protocols. { 'net,wərk 'är·kə,tek·chər }

network constant [ELEC] One of the resistance, inductance, mutual inductance, or capacitance values involved in a circuit or network; if these values are constant, the network is said to be linear. { 'net,wərk 'kän·stənt }

network control program [COMPUT SCI] A computer program that controls communications between multiple terminals and a mainframe. { 'net,wərk kən'trōl ,prō·grəm }

network data structure [COMPUT SCI] The arrangement of data in a computer system into interconnected groupings of information according to relationships between groupings. { 'net,wərk 'dad·ə ,strək·chər }

network filter [ELEC] A combination of electrical elements (for example, interconnected resistors, coils, and capacitors) that represents relatively small attenuation to signals of a certain frequency, and great attenuation to all other frequencies. { 'net,wərk 'fil·tər }

network flow [ELEC] Flow of current in a network. { 'net,wərk 'flō }

networking [COMPUT SCI] The use of transmission lines to join geographically separated computers. { 'net,wərk·iŋ }

network input impedance [ELEC] The impedance between the input terminals of a network under specified conditions. { 'net ,wərk 'in·pùt im,pēd·əns }

network master relay [ELEC] Relay that performs the chief functions of closing and tripping an alternating-current low-voltage network protector. { 'net,wərk 'mas·tər 'rē,lā }

network operating system [COMPUT SCI] The system software of a local-area network, which manages the network's resources, handling multiple inputs concurrently and providing necessary security. Abbreviated NOS. { ,net,wərk 'äp·ə ,rād·iŋ ,sis·təm }

network phasing relay [ELEC] Relay which functions in conjunction with a master relay to limit closure of the network protector to a predetermined relationship between the voltage and the network voltage. { 'net,wərk 'fāz·iŋ 'rē,lā }

network planning *See* network analysis. { 'net ,wərk ,plan·iŋ }

network relay [ELEC] Form of voltage, power, or other type of relay used in the protection and control of alternating-current low-voltage networks. { 'net,wərk 'rē,lā }

network server *See* file server. { 'net,wərk ,sər·vər }

network synthesis [ELEC] Derivation of the configuration and element values of a network with given electrical properties. { 'net,wərk ,sin·thə·səs }

network system [COMPUT SCI] A type of data-base management system in which data records can be related in more general structures than in a hierarchical file, permitting a given record to have more than one parent. { 'net,wərk ,sis·təm }

network terminal protocol [COMMUN] A set of standards that allows the user of a computer connected to a network to log in on any other computer on the network. Also known as TELNET. { ¦net,wərk ¦tərm·ən·əl 'prō·də,kȯl }

network theory [ELEC] The systematizing and generalizing of the relations between the currents, voltages, and impedances associated with the elements of an electrical network. { 'net ,wərk ,thē·ə·rē }

network transfer admittance [ELEC] The current that would flow through a short circuit between one pair of terminals in a network if a unit voltage were applied across the other pair. { 'net,wərk 'trans·fər ad,mit·əns }

network vulnerability scan [COMPUT SCI] The process of determining the connectivity of the protected subnetwork within a security perimeter of a distributed computing system, and then testing the strength of protection at all access points to the subnetwork. { ¦net,wərk ,vəl·nər·ə'bil·əd·ē ,skan }

Neugebauer effect [ELEC] A small change in the polarization of an optically isotropic medium in an external electric field, related to the electrooptical Kerr effect. { 'nȯi·gə,baù·ər i,fekt }

neural network [COMPUT SCI] An information-processing device that utilizes a very large number of simple modules, and in which information is stored by components that at the same time effect connections between these modules. { 'nùr·əl 'net,wərk }

neuristor [ELECTR] A device that behaves like a nerve fiber in having attenuationless propagation of signals; one goal of research is development of a complete artificial nerve cell, containing many neuristors, that could duplicate the function of the human eye and brain in recognizing characters and other visual images. { nù'ris·tər }

neuromorphic engineering [ENG] Use of the functional principles of biological nervous systems to inspire the design and fabrication of artificial nervous systems, such as vision chips and roving robots. { ¦nù·rō¸mȯr·fik ¸en·jə'nir·iŋ }

neuronal interface [ENG] An artificial synapse capable of reversible chemical-to-electrical transduction processes between neural tissue and conventional solid-state electronic devices for applications such as aural, visual, and mechanical prostheses, as well as expanding human memory and intelligence. { nù¦rōn·əl 'in·tər,fās }

neurotechnology [ENG] The application of microfabricated devices to achieve direct contact with the electrically active cells of the nervous system (neurons). { ¸nù·rō·tek'näl·ə·jē }

neutral [ELEC] Referring to the absence of a net electric charge. { 'nü·trəl }

neutral conductor [ELEC] A conductor of a polyphase circuit or of a single-phase, three-wire circuit which is intended to have a potential such that the potential differences between it and each of the other conductors are approximately equal in magnitude and are also equally spaced in phase. { 'nü·trəl kən'dək·tər }

neutral ground [ELEC] Ground connected to the neutral point or points of an electric circuit, transformer, rotating machine, or system. { 'nü·trəl 'graùnd }

neutralize [ELECTR] To nullify oscillation-producing voltage feedback from the output to the input of an amplifier through tube interelectrode capacitances; an external feedback path is used to produce at the input a voltage that is equal in magnitude but opposite in phase to that fed back through the interelectrode capacitance. { 'nü·trə,līz }

neutralized radio-frequency stage [ELECTR] Stage having an additional circuit connected to feed back, in the opposite phase, an amount of energy equivalent to what is causing the oscillation, thus neutralizing any tendency to oscillate and making the circuit function strictly as an amplifier. { 'nü·trə,līzd ¦rād·ē·ō 'frē·kwən·sē ,stāj }

neutralizing capacitor [ELECTR] Capacitor, usually variable, employed in a radio receiving or transmitting circuit to feed a portion of the signal voltage from the plate circuit of a stage back to the grid circuit. { 'nü·trə,līz·iŋ kə,pas·əd·ər }

neutralizing circuit [ELECTR] Portion of an amplifier circuit which provides an intentional feedback path from plate to grid to prevent regeneration. { 'nü·trə,līz·iŋ ,sər·kət }

neutralizing voltage [ELECTR] Voltage developed in the plate circuit (Hazeltine neutralization) or in the grid circuit (Rice neutralization), used to nullify or cancel the feedback through the tube. { 'nü·trə,līz·iŋ ¦vōl·tij }

neutral point [ELEC] Point which has the same potential as the point of junction of a group of equal nonreactive resistances connected at their free ends to the appropriate main terminals or lines of the system. { 'nü·trəl ,pȯint }

neutral relay [ELEC] Relay in which the movement of the armature does not depend upon the direction of the current in the circuit controlling the armature. Also known as nonpolarized relay. { 'nü·trəl 'rē,lā }

neutral return path [ELEC] A route from the load back to the power source, completing a circuit in an electric power distribution system, which is grounded, usually by connections to water pipes. { 'nü·trəl ri'tərn ,path }

neutral safety switch [ELEC] An electric switch that is connected to the ignition switch of an internal combustion engine and prevents starting the engine unless the transmission shift lever is in the neutral or park position, or the clutch pedal is depressed. { ¦nü·trəl 'sāf·tē ¸swich }

neutral stability [CONT SYS] Condition in which the natural motion of a system neither grows nor decays, but remains at its initial amplitude. { 'nü·trəl stə'bil·əd·ē }

neutral temperature [ELECTR] The temperature of the hot junction of a thermocouple at which the electromotive force of the thermocouple attains its maximum value, when the cold junction is maintained at a constant temperature of 0°C. { 'nü·trəl 'tem·prə·chər }

neutral zone *See* dead band. { 'nü·trəl ¸zōn }

new-band service [COMMUN] A broadcasting service that is allocated a portion of the radio frequency spectrum that was not previously used. { 'nü ¸band ¸sər·vis }

newsgroup [COMPUT SCI] A collection of computers on a wide-area network that form a discussion group on a particular topic, such that a message generated by any computer in the group is automatically distributed over the network to all the others. Also known as forum. { 'nüz¸grüp }

next-event file [COMPUT SCI] A portion of a computer simulation program which maintains a list of all events to be processed and updates the simulated time. { 'nekst i'vent ¸fīl }

nexus [COMMUN] A connection or interconnection of a communications system, such as a data link or a network of branches and nodes. { 'nek·səs }

nibble [COMPUT SCI] A unit of computer storage or information equal to one-half a byte. { 'nib·əl }

Nichol's chart [CONT SYS] A plot of curves along which the magnitude M or argument α of the frequency control ratio is constant on a graph whose ordinate is the logarithm of the magnitude of the open-loop transfer function, and whose abscissa is the open-loop phase angle. { 'nik·əlz ¸chärt }

nickel-cadmium battery [ELEC] A sealed storage battery having a nickel anode, a cadmium cathode, and an alkaline electrolyte; widely used in cordless appliances; without recharging, it can serve as a primary battery. Also known as cadmium-nickel storage cell. { 'nik·əl ¦kad·mē·əm 'bad·ə·rē }

nickel delay line [ELECTR] An acoustic delay line in which nickel is used to transmit sound signals. { 'nik·əl di'lā ¸līn }

nickel-iron battery *See* Edison battery. { 'nik·əl ¦ī·ərn 'bad·ə·rē }

NIF *See* noise improvement factor.

N-indicator *See* N-display. { 'en ¸in·də¸kād·ər }

nine's complement [COMPUT SCI] The radix-minus-1 complement of a numeral whose radix is 10. { 'nīnz 'käm·plə·mənt }

Nipkow disk [COMPUT SCI] In optical character recognition, a disk having one or more spirals of holes around the outer edge, with successive openings positioned so that rotation of the disk provides mechanical scanning, as of a document. { 'nip·kō ¸disk }

nit [COMMUN] A unit of information content such that the information content of a symbol or message in nits is the negative of the natural logarithm of the probability of selecting that symbol or message from all the symbols or messages which could have been chosen. Also known as nepit. { nit }

n-key rollover [COMPUT SCI] The ability of a computer-terminal keyboard to remember the order in which keys were operated and pass this information to the computer even when several keys are depressed before other keys have been released. { 'en ¸kē 'rōl¸ō·vər }

N-level address [COMPUT SCI] A multilevel address specifying N levels of addressing. { 'en ¸lev·əl 'ad¸res }

N-level logic [ELECTR] An arrangement of gates in a digital computer in which not more than N gates are connected in series. { 'en ¸lev·əl 'läj·ik }

N-modular redundancy [COMPUT SCI] A generalization of triple modular redundancy in which there are N identical units, where N is any odd number. { 'en ¦mäj·ə·lər ri'dən·dən·sē }

NMOS [ELECTR] Metal-oxide semiconductors that are made on *p*-type substrates, and whose active carriers are electrons that migrate between *n*-type source and drain contacts. Derived from *n*-channel metal-oxide semiconductor. { 'en ¸mòs }

NMRR *See* normal-mode rejection ratio.

nn junction [ELECTR] In a semiconductor, a region of transition between two regions having different properties in *n*-type semiconducting material. { ¦en¦en ¸jəŋk·shən }

no-address instruction [COMPUT SCI] An instruction which a computer can carry out without using an operand from storage. { 'nō 'ad¸res in ¸strək·shən }

no-break power [ELEC] Power system designed to fulfill load requirements during the interval between the failure of the primary power and the time the auxiliary power can be made available. { 'nō 'brāk 'paù·ər }

nodal analysis [ELEC] A method of electrical circuit analysis in which potential differences are taken as independent variables and the sum of the currents flowing into a node is equated to 0. { 'nōd·əl ə'nal·ə·səs }

nodal points [ELEC] Junction points in a transmission system; the automatic switches and switching centers are the nodal points in automated systems. { 'nōd·əl ¸pòins }

node [ELEC] *See* branch point. [ELECTR] A junction point within a network. { nōd }

node voltage [ELEC] The voltage at a given point in an electric network with respect to that at a node. { 'nōd ¸vōl·tij }

noise [COMMUN] Unwanted electrical signal disturbances. [ELEC] Interfering and unwanted currents or voltages in an electrical device or system. { nòiz }

noise analyzer [ELECTR] A device used for noise analysis. { 'nȯiz ˌan·əˌlīz·ər }

noise-canceling microphone *See* close-talking microphone. { 'nȯiz ˈkans·liŋ 'mī·krəˌfōn }

noise digit [COMPUT SCI] A digit, usually 0, inserted into the rightmost position of the mantissa of a floating point number during a left-shift operation associated with normalization. Also known as noisy digit. { 'nȯiz ˌdij·ət }

noise distortion [COMMUN] Noise on a communications facility which exceeds standards governing acceptable levels and which negatively affects the signal. { 'nȯiz diˌstȯr·shən }

noise factor [ELECTR] The ratio of the total noise power per unit bandwidth at the output of a system to the portion of the noise power that is due to the input termination, at the standard noise temperature of 290 K. Also known as noise figure. { 'nȯiz ˌfak·tər }

noise figure *See* noise factor. { 'nȯiz ˌfig·yər }

noise filter [ELECTR] **1.** A filter that is inserted in an alternating-current power line to block noise interference that would otherwise travel through the line in either direction and affect the operation of receivers. **2.** A filter used in a radio receiver to reduce noise, usually an auxiliary low-pass filter which can be switched in or out of the audio system. { 'nȯiz ˌfil·tər }

noise generator [ELECTR] A device which produces (usually random) electrical noise, for use in tests of the response of electrical systems to noise, and in measurements of noise intensity. Also known as noise source. { 'nȯiz ˌjen·əˌrād·ər }

noise grade [COMMUN] Number which defines the relative noise at a particular location with respect to other locations throughout the world. { 'nȯiz ˌgrād }

noise improvement factor [COMMUN] In pulse modulation, the receiver output signal-to-noise ratio divided by the receiver input signal-to-noise ratio. Abbreviated NIF. Also known as improvement factor; signal-to-noise improvement factor. { 'nȯiz im'prüv·mənt ˌfak·tər }

noise jammer [ELECTR] An electronic jammer that emits a carrier modulated with recordings or synthetic reproductions of natural atmospheric noise; the radio-frequency carrier may be suppressed; used to discourage the enemy by simulating naturally adverse communications conditions. { 'nȯiz ˌjam·ər }

noise jamming [ELECTR] The emission of a radio-frequency carrier modulated with a white noise signal, derived from a gas-discharge tube of other broadband noise source, appearing in an enemy radar as background noise, tending to mask the radar echo or, in communications, the radio signal of interest. { 'nȯiz ˌjam·iŋ }

noise killer [ELEC] **1.** Device installed in a circuit to reduce its interference to other circuits. **2.** *See* noise suicide circuit. { 'nȯiz ˌkil·ər }

noiseless channel [COMMUN] In information theory, a communications channel in which the effects of random influences are negligible, and there is essentially no random error. { 'nȯiz·ləs 'chan·əl }

noise limiter [ELECTR] A limiter circuit that cuts off all noise peaks that are stronger than the highest peak in the desired signal being received, thereby reducing the effects of atmospheric or human-produced interference. Also known as noise silencer; noise suppressor. { 'nȯiz ˌlim·əd·ər }

noise measurement [ELECTR] Any of a wide range of measurements of random and nonrandom electrical noise, but usually noise-power measurement. { 'nȯiz ˌmezh·ər·mənt }

noise-metallic [ELECTR] In telephone communications, weighted noise current in a metallic circuit at a given point when the circuit is terminated at that point in the nominal characteristic impedance of the circuit. { 'nȯiz mə'tal·ik }

noise-modulated jamming [ELECTR] Random electronic noise that appears at the radar receiver as background noise and tends to mask the desired radar echo or radio signal. { 'nȯiz ˈmäj·əˌlād·əd 'jam·iŋ }

noise-power measurement [ELECTR] Measurement of the power carried by electrical noise averaged over some brief interval of time, usually by amplifying noise from the source in a linear amplifier and then using a quadratic detector followed by a low-pass filter and an indicating device. { 'nȯiz ˈpau̇·ər ˌmezh·ər·mənt }

noise-reducing antenna system [ELECTROMAG] Receiving antenna system so designed that only the antenna proper can pick up signals; it is placed high enough to be out of the noise-interference zone, and is connected to the receiver with a shielded cable or twisted transmission line that is incapable of picking up signals. { 'nȯiz riˌdüs·iŋ an'ten·əˌsis·təm }

noise silencer *See* noise limiter. { 'nȯiz ˌsī·lən·sər }

noise source *See* noise generator. { 'nȯiz ˌsȯrs }

noise suicide circuit [ELECTR] A circuit which reduces the gain of an amplifier for a short period whenever a sufficiently large noise pulse is received. Also known as noise killer. { 'nȯiz 'sü·əˌsīd ˌsər·kət }

noise suppression [ELECTR] Any method of reducing or eliminating the effects of undesirable electrical disturbances, as in frequency modulation whenever the signal carrier level is greater than the noise level. { 'nȯiz səˌpresh·ən }

noise suppressor **1.** A circuit that blocks the audio-frequency amplifier of a radio receiver automatically when no carrier is being received, to eliminate background noise. Also known as squelch circuit. **2.** A circuit that reduces record surface noise when playing phonograph records, generally by means of a filter that blocks out the higher frequencies where such noise predominates. **3.** *See* noise limiter. { 'nȯiz səˌpres·ər }

noise temperature [ELEC] The temperature at which the thermal noise power of a passive system per unit bandwidth would be equal to the actual noise at the actual terminals; the standard reference temperature for noise measurements is 290 K. { 'nȯiz ˌtem·prə·chər }

noise testing [ELECTR] The measurement of the power dissipated in a resistance termination of given value joined to one end of a telephone or telegraph circuit when no test power is applied to the circuit. { 'nóiz ,test·iŋ }

noise tube [ELECTR] A gas tube used as a source of white noise. { 'nóiz ,tüb }

noise weighting [ELECTR] Use of an electrical network to obtain a weighted average over frequency of the noise power, which is representative of the relative disturbing effects of noise in a communications system at various frequencies. { 'nóiz ,wād·iŋ }

noisy channel [COMMUN] In information theory, a communications channel in which the effects of random influences cannot be dismissed. { 'nóiz·ē 'chan·əl }

noisy digit *See* noise digit. { 'nóiz·ē 'dij·ət }

noisy mode [COMPUT SCI] A floating-point arithmetic procedure associated with normalization in which "1" bits, rather than "0" bits, are introduced in the low-order bit position during the left shift. { 'nóiz·ē ,mōd }

no-load current [ELEC] The current which flows in a network when the output is open-circuited. { 'nō ¦lōd 'kə·rənt }

no-load loss [ELEC] The power loss of a device that is operated at rated voltage and frequency but is not supplying power to a load. { 'nō ¦lōd 'lòs }

no-load voltage *See* open-circuit voltage. { 'nō ¦lōd 'vōl·tij }

nominal band [COMMUN] Frequency band of a facsimile-signal wave equal in width to that between zero frequency and maximum modulating frequency; the frequency band occupied in the transmitting medium will, in general, be greater than the nominal band. { 'näm·ə·nəl ,band }

nominal bandwidth [COMMUN] The interval between the assigned frequency limits of a channel. [ENG] The difference between the nominal upper and lower cutoff frequencies of an acoustic or electric filter. { 'näm·ə·nəl 'band,width }

nominal impedance [ELEC] Impedance of a circuit under conditions at which it was designed to operate; normally specified at center of operating frequency range. { 'näm·ə·nəl im'pēd·əns }

nominal value [ELEC] The value of some property (such as resistance, capacitance, or impedance) of a device at which it is supposed to operate, under normal conditions, as opposed to actual value. { 'näm·ə·nəl 'val·yü }

nonacoustic coupler [ELECTR] A type of modem that is built into a microcomputer or terminal and connects it directly to a telephone line. { ¦nän·ə'kü·stik 'kəp·lər }

nonambiguity [COMMUN] The property of a code in which any character can be recognized uniquely without reference to preceding characters or the spatial position of a character. { ¦nän ,am·bə'gyü·əd·ē }

nonanticipatory system *See* causal system. { ¦nän·an'tis·ə·pə,tór·ē ,sis·təm }

nonarithmetic shift *See* cyclic shift. { ¦nän,a ,rith'med·ik 'shift }

nonblocking access [COMMUN] Connection of the incoming line or trunk made within the switching center at all times, provided that the required outgoing line or trunk is not busy. { 'nän,bläk·iŋ 'ak,ses }

noncoherent integration [ELECTR] A radar signal processing technique in which the amplitudes of successive pulses from a single scene or target location are added for increased sensitivity; such integration in the excited phosphor of a cathode-ray-tube radar display representing one point in space is an elementary example of this process. { ¦nän·kō'hir·ənt 'in·tə'grā·shən }

noncoincident demand [ELEC] The sum of the peak demands of all the utilities in a specified region, regardless of the times at which they occurred. { ¦nän·kō'in·sə·dənt di'mand }

noncomposite color picture signal [COMMUN] The signal in analog color television transmission that represents complete color picture information but excludes the line- and field-synchronizing signals. { ¦nän·kəm'päz·ət ¦kəl·ər 'pik·chər ,sig·nəl }

nondegenerate amplifier [ELECTR] Parametric amplifier that is characterized by a pumping frequency considerably higher than twice the signal frequency; the output is taken at the signal input frequency; the amplifier exhibits negative impedance characteristics, indicative of infinite gain, and is therefore capable of oscillation. { ¦nän·di'jen·ə·rət 'am·plə,fī·ər }

nondegenerative basic feasible solution [COMPUT SCI] In linear programming, a basic feasible solution with exactly m positive variables x_i, where m is the number of constraint equations. { ¦nän·di'jen·rəd·iv 'bā·sik 'fēz·ə·bəl sə'lü·shən }

nondeletable message [COMPUT SCI] A message that appears on a computer display which can be removed only by entering a specific command. { ,nän·di'lēd·ə·bəl 'mes·ij }

nondestructive breakdown [ELECTR] Breakdown of the barrier between the gate and channel of a field-effect transistor without causing failure of the device; in a junction field-effect transistor, avalanche breakdown occurs at the pn junction. { ¦nän·di'strək·div 'brāk,daún }

nondestructive read [COMPUT SCI] A reading process that does not erase the data in memory; the term sometimes includes a destructive read immediately followed by a restorative write-back. Also known as nondestructive readout (NDRO). { ¦nän·di'strək·div 'rēd }

nondirectional *See* omnidirectional. { ¦nän·di 'rek·shən·əl }

nondirectional antenna *See* omnidirectional antenna. { ¦nän·di'rek·shən·əl an'ten·ə }

nonerasable storage *See* read-only memory. { ¦nän·i'rās·ə·bəl 'stór·ij }

nonexecutable statement [COMPUT SCI] A statement in a higher-level programming language which cannot be related to the instructions in the machine language program ultimately produced, but which provides the compiler with essential information from which it may determine the allocation of storage and other organizational

characteristics of the final program. { ¦nän ˌek·səˈkyüd·ə·bəl ˈstāt·mənt }

nonfatal error [COMPUT SCI] An error in a computer program which does not result in termination of execution, but which causes the processor to invent an interpretation, issue a warning, and continue processing. { ˈnänˌfād·əl ˈer·ər }

nonfunctional packages software [COMPUT SCI] General-purpose software which permits the user to handle her or his particular applications requirements with little or no additional program or systems design work, or to perform certain specialized computational functions. { nänˈfəŋk·shən·əl ˈpak·ij·əz ˈsōftˌwer }

nongraphic character [COMPUT SCI] A set of signals that, when sent to a printer, results in a control action, such as carriage return, line feed, or tab, rather than the generation of a printed character. { ¦nänˈgraf·ik ˈkar·ik·tər }

nonhoming tuning system [ELECTR] Motor-driven automatic tuning system in which the motor starts up in the direction of previous rotation; if this direction is incorrect for the new station, the motor reverses, after turning to the end of the dial, then proceeds to the desired station. { ¦nänˈhōm·iŋ ˈtün·iŋ ˌsis·təm }

noninductive [ELEC] Having negligible or zero inductance. { ˌnän·inˈdək·tiv }

noninductive capacitor [ELEC] A capacitor constructed so it has practically no inductance; foil layers are staggered during winding, so an entire layer of foil projects at either end for contact-making purposes; all currents then flow laterally rather than spirally around the capacitor. { ˌnän·inˈdək·tiv kəˈpas·əd·ər }

noninductive resistor [ELEC] A wire-wound resistor constructed to have practically no inductance, either by using a hairpin winding or be reversing connections to adjacent sections of the winding. { ˌnän·inˈdək·tiv riˈzis·tər }

noninductive winding [ELEC] A winding constructed so that the magnetic field of one turn or section cancels the field of the next adjacent turn or section. { ˌnän·inˈdək·tiv ˈwīn·diŋ }

nonintelligible crosstalk [COMMUN] Crosstalk which cannot be understood regardless of its received volume, but which because of its syllabic nature is more annoying subjectively than thermal-type noise. { ˌnän·inˈtel·ə·jə·bəl ˈkrȯsˌtȯk }

noninteracting control [CONT SYS] A feedback control in a system with more than one input and more than one output, in which feedback transfer functions are selected so that each input influences only one output. { ¦nänˌin·tərˈak·tiŋ kənˈtrōl }

noninverting amplifier [ELECTR] An operational amplifier in which the input signal is applied to the ungrounded positive input terminal to give a gain greater than unity and make the output voltage change in phase with the input voltage. { ¦nän·inˈvərd·iŋ ˈam·pləˌfī·ər }

noninverting parametric device [ELECTR] Parametric device whose operation depends essentially upon three frequencies, a harmonic of the pump frequency and two signal frequencies, of which one is the sum of the other plus the pump harmonic. { ¦nän·inˈvərd·iŋ ˌpar·əˈmetrik diˈvīs }

nonlinear amplifier [ELECTR] An amplifier in which a change in input does not produce a proportional change in output. { ˈnänˌlin·ē·ər ˈam·pləˌfī·ər }

nonlinear capacitor [ELEC] Capacitor having a mean charge characteristic or a peak charge characteristic that is not linear, or a reversible capacitance that varies with bias voltage. { ˈnänˌlin·ē·ər kəˈpas·əd·ər }

nonlinear circuit [ELEC] A circuit in which the current and voltage in any element that results from two sources of energy acting together is not equal to the sum of the currents or voltages that result from each of the sources acting alone. { ˈnänˌlin·ē·ər ˈsər·kət }

nonlinear circuit component [ELECTR] An electrical device for which a change in applied voltage does not produce a proportional change in current. Also known as nonlinear device; nonlinear element. { ˈnänˌlin·ē·ər ¦sər·kət kəm }{ ˈpō·nənt }

nonlinear control system [CONT SYS] A control system that does not have the property of superposition, that is, one in which some or all of the outputs are not linear functions of the inputs. { ˈnänˌlin·ē·ər kənˈtrōl ˌsis·təmz }

nonlinear coupler [ELECTR] A type of frequency multiplier which uses the nonlinear capacitance of a junction diode to couple energy from the input circuit, which is tuned to the fundamental, to the output circuit, which is tuned to the desired harmonic. { ˈnänˌlin·ē·ər ˈkəp·lər }

nonlinear crosstalk [COMMUN] Interaction between channels occupying different wavelengths in a wavelength-division-multiplexed system because of optical nonlinearities in the transmission medium. { ˌnänˌlin·ē·ər ˈkrȯsˌtȯk }

nonlinear detection [ELECTR] Detection based on the curvature of a tube characteristic, such as square-law detection. { ˈnänˌlin·ē·ər diˈtek·shən }

nonlinear device *See* nonlinear circuit component. { ˈnänˌlin·ē·ər diˈvīs }

nonlinear dielectric [ELEC] A dielectric whose polarization is not proportional to the applied electric field. { ˈnänˌlin·ē·ər ˌdī·əˈlek·trik }

nonlinear distortion [ELECTR] Distortion in which the output of a system or component does not have the desired linear relation to the input. [ENG ACOUS] The ratio of the total root-mean-square (rms) harmonic distortion output of a microphone to the rms value of the fundamental component of the output. { ˈnänˌlin·ē·ər diˈstȯr·shən }

nonlinear element *See* nonlinear circuit component. { ˈnänˌlin·ē·ər ˈel·ə·mənt }

nonlinear feedback control system [CONT SYS] Feedback control system in which the relationships between the pertinent measures of the system input and output signals cannot be adequately described by linear means. { ˈnänˌlin·ē·ər ˈfēdˌbak kənˈtrōl ˌsis·təm }

nonlinear fiber amplifier [COMMUN] An optical amplifier in which nonlinear interactions (stimulated Raman and Brillouin scattering and four-wave mixing) between pump light and the signal cause transfer of power to the signal, resulting in fiber gain. { ˌnänˈlin·ē·ər ˌfī·bər ˈam·plə,fī·ər }

nonlinear inductance [ELEC] The behavior of an inductor for which the voltage drop across the inductor is not proportional to the rate of change of current, such as when the inductor has a core of magnetic material in which magnetic induction is not proportional to magnetic field strength. { ˈnän,lin·ē·ər inˈdək·təns }

nonlinear network [ELEC] A network in which the current or voltage in any element that results from two sources of energy acting together is not equal to the sum of the currents or voltages that result from each of the sources acting alone. { ˈnän,lin·ē·ər ˈnet,wərk }

nonlinear oscillator [ELECTR] A radio-frequency oscillator that changes frequency in response to an audio signal; it is the basic circuit used in eavesdropping devices. { ˈnän,lin·ē·ər ˈäs·əˌlād·ər }

nonlinear programming [MATH] A branch of applied mathematics concerned with finding the maximum or minimum of a function of several variables, when the variables are constrained to yield values of other functions lying in a certain range, and either the function to be maximized or minimized, or at least one of the functions whose value is constrained, is nonlinear. { ˈnänˌlin·ē·ər ˈprō,gram·iŋ }

nonlinear reactance [ELECTR] The behavior of a coil or capacitor whose voltage drop is not proportional to the rate of change of current through the coil, or the charge on the capacitor. { ˈnän,lin·ē·ər rēˈak·təns }

nonlinear resistance [ELECTR] The behavior of a substance (usually a semiconductor) which does not obey Ohm's law but has a voltage drop across it that is proportional to some power of the current. { ˈnän,lin·ē·ər riˈzis·təns }

nonlinear taper [ELEC] Nonuniform distribution of resistance throughout the element of a potentiometer or rheostat. { ˈnän,lin·ē·ər ˈtā·pər }

nonloaded Q [ELEC] Of an electric impedance, the Q value of the impedance without external coupling or connection. Also known as basic Q. { ˈnän,lōd·əd ˈkyü }

nonmaintenance time [COMPUT SCI] The elapsed time during scheduled working hours between the determination of a machine failure and placement of the equipment back into operation. { ˈnänˈmānt·ən·əns ˌtīm }

nonmetallic sheathed cable [ELEC] Assembly of two or more rubber-covered conductors in an outer sheath of nonconducting fibrous material that has been treated to make it flame-resistant and moisture-repellent. { ˈnän·məˈtal·ik ˈshēthd ˈkā·bəl }

non-minimum-phase system [CONT SYS] A linear system whose transfer function has one or more poles or zeros with positive, nonzero real parts. { ˈnänˈmin·ə·məm ˈfāz ˌsis·təm }

nonmultiple switchboard [ELEC] Manual telephone switchboard in which each subscriber line is attached to only one jack. { ˈnänˈməl·tə·pəl ˈswich,bȯrd }

nonnumeric character [COMPUT SCI] Any character except a digit. { ˈnän·nüˈmer·ik ˈkar·ik·tər }

nonnumeric programming [COMPUT SCI] Computer programming that deals with objects other than numbers. { ˈnän·nü,mer·ik ˈprō,gram·iŋ }

non-ohmic [ELEC] Pertaining to a substance or circuit component that does not obey Ohm's law. { ˈnänˈō·mik }

nonpolarized relay *See* neutral relay. { ˈnänˈpō·lə ˌrīzd ˈrēˌlā }

nonpreemptive multitasking *See* cooperative multitasking. { ˌnän·prēˈem·tiv ˈməl·tēˌtask·iŋ }

nonprint code [COMPUT SCI] A bit combination which is interpreted as no printing, no spacing. { ˈnänˈprint ˈkōd }

nonpriority interrupt [COMPUT SCI] Any one of a group of interrupts which may be disregarded by the central processing unit. { ˈnän·priˈär·əd·ē ˈint·əˌrəpt }

nonprocedural language [COMPUT SCI] A programming language in which the program does not follow the actual steps a computer follows in executing a program. { ˌnän·prəˈsē·jə·rəl ˈlaŋ ˌgwij }

nonreactive [ELEC] Pertaining to a circuit, component, or load that has no capacitance or impedance, so that an alternating current is in phase with the corresponding voltage. { ˌnän·rēˈak·tiv }

nonreactive load *See* resistive load. { ˌnän·rēˈak·tiv ˈlōd }

nonrecoverable error [COMPUT SCI] An error detected during computer processing that cannot be handled by the computer system and therefore causes processing to be interrupted. { ˈnän·riˈkəv·rə·bəl ˈer·ər }

nonrecursive filter [ELECTR] A digital filter that lacks feedback; that is, its output depends on present and past input values only and not on previous output values. { ˌnän·ri,kər·siv ˈfil·tər }

nonredundant system [COMPUT SCI] A computer system designed in such a way that only the absolute minimum amount of hardware is utilized to implement its function. { ˈnän·riˈdən·dənt ˈsis·təm }

nonrenewable fuse unit [ELEC] Fuse unit that cannot be readily restored for service after operation. { ˈnän·riˈnü·ə·bəl ˈfyüz ˌyü·nət }

nonreproducing code [COMPUT SCI] A code which normally does not appear as such in a generated output but will result in a function such as paging or spacing. { ˈnän,rē·prəˈdü·siŋ ˈkōd }

nonresident routine [COMPUT SCI] Any computer routine which is not stored permanently in the memory but must be read into memory from a data carrier or external storage device. { ˈnänˈrez·ə·dənt rü,tēn }

nonresonant antenna [ELECTROMAG] A long-wire or traveling-wave antenna which does not have natural frequencies of oscillation, and responds

equally well to radiation over a broad range of frequencies. { ¦nän'rez·ən·ənt an'ten·ə }

non-return-to-zero |COMPUT SCI| A mode of recording and readout in which it is not necessary for the signal to return to zero after each item of recorded data. Abbreviated NRZ. { 'nän ri,tərn tə 'zir·ō }

nonrotating disk See semiconductor disk. { ¦nän'rō,tād·iŋ 'disk }

nonscrollable message |COMPUT SCI| A message on a computer display that does not scroll off the top of the display as new information is written at the bottom. { ¦nän'skrō·lə·bəl 'mes·ij }

nonservo robot See fixed-stop robot. { ¦nän'sər·vō 'rō,bät }

nonshared control unit |COMPUT SCI| A control unit relating to only one device. Also known as unipath. { ¦nän¦sherd kən'trōl ,yü·nət }

nonshorting contact switch |ELEC| Selector switch in which the width of the movable contact is less than the distance between contact clips, so that the old circuit is broken before the new circuit is completed. { 'nän,shȯrd·iŋ 'kän,takt ,swich }

nonsinusoidal waveform |ELEC| The representation of a wave which does not vary in a sinusoidal manner, and which therefore contains harmonics. { ¦nän,sī·nə'sȯid·əl 'wāv,fȯrm }

nonstop computer |COMPUT SCI| A computer system that is equipped with duplicate components or excess capacity so that a hardware or software failure will not interrupt processing. { ¦nän'stäp kəm'pyüd·ər }

nonstop switch |ELEC| A manual switch in an elevator car that can prevent the car from stopping at a specified floor. { ¦nän,stäp 'swich }

nonstorage camera tube |ELECTR| Television camera tube in which the picture signal is, at each instant, proportional to the intensity of the illumination on the corresponding area of the scene. { ¦nän'stȯr·ij 'kam·rə ,tüb }

nonswappable program |COMPUT SCI| A program that is given priority status so that its execution cannot be suspended to allow execution of other programs. { ¦nän'swäp·ə·bəl 'prō·grəm }

nonsynchronous |ELEC| Not related in phase, frequency, or speed to other quantities in a device or circuit. { ¦nän'siŋ·krə·nəs }

nonsynchronous timer |ELECTR| A circuit at the receiving end of a communications link which restores the time relationship between pulses when no timing pulses are transmitted. { ¦nän'siŋ·krə·nəs 'tīm·ər }

nonsynchronous transmission |ELECTR| A data transmission process in which a clock is not used to control the unit intervals within a block or a group of data signals. { ¦nän'siŋ·krə·nəs tranz'mish·ən }

nonsynchronous vibrator |ELECTR| Vibrator that interrupts a direct-current circuit at a frequency unrelated to the other circuit constants and does not rectify the resulting stepped-up alternating voltage. { ¦nän'siŋ·krə·nəs 'vī,brād·ər }

nonuniform memory access machine |COMPUT SCI| A multiprocessor in which the memory is spread out over memory modules, which are attached to the processors, so that each processor has its own memory module. Abbreviated NUMA machine. { ¦nän¦yün·i,fȯrm ¦mem·rē 'ak·ses mə,shēn }

nonvolatile memory See nonvolatile storage. { ¦nän'väl·ə·təl 'mem·rē }

nonvolatile random-access memory |COMPUT SCI| A semiconductor storage device which has two memory cells for each bit, one of which is volatile, as in a static RAM (random-access memory), and provides unlimited read and write operations, while the other is nonvolatile, and provides the ability to retain information when power is removed. Abbreviated NV RAM. { ¦nän'väl·ə·təl ¦ran·dəm ¦ak,ses 'mem·rē }

nonvolatile storage |COMPUT SCI| A computer storage medium that retains information in the absence of power, such as a magnetic tape, drum, or core. Also known as nonvolatile memory. { ¦nän'väl·ə·təl 'stȯr·ij }

NO OP |COMPUT SCI| An instruction telling the computer to do nothing, except to proceed to the next instruction in sequence. Also known as do-nothing instruction; no-operation instruction. { 'nō ,äp }

no-operation instruction See NO OP. { ¦nō ,äp·ə'rā·shən in'strək·shən }

NOR circuit |ELECTR| A circuit in which output voltage appears only when signal is absent from all of its input terminals. { 'nȯr ,sər·kət }

normal direction flow |COMPUT SCI| The direction from left to right or top to bottom in flow charting. { 'nȯr·məl di'rek·shən ,flō }

normal electrode |ELEC| Standard electrode used for measuring electrode potentials. { 'nȯr·məl i'lek,trōd }

normal form |COMPUT SCI| The form of a floating-point number whose mantissa lies between 0.1 and 1.0. { 'nȯr·məl 'fȯrm }

normal impedance See free impedance. { 'nȯr·məl im'pēd·əns }

normalization |COMPUT SCI| Breaking down of complex data structures into flat files. { ,nȯr·mə·lə'zā·shən }

normalize |COMPUT SCI| **1.** To adjust the representation of a quantity so that this representation lies within a prescribed range. **2.** In particular, to adjust the exponent and mantissa of a floating point number so that the mantissa falls within a prescribed range. { 'nȯr·mə,līz }

normalized Q |ELEC| The ratio of the reactive component of the impedance of a filter section to the resistive component. { 'nȯr·mə,līzd 'kyü }

normal mode |COMPUT SCI| Operation of a computer in which it executes its own instructions rather than those of a different computer. { 'nȯr·məl ,mōd }

normal-mode helix |ELECTROMAG| A type of helical antenna whose diameter and electrical length are considerably less than a wavelength, and which has a radiation pattern with greatest intensity normal to the helix axis. { 'nȯr·məl ,mōd 'hē,liks }

normal-mode rejection ratio |ELECTR| The ability of an amplifier to reject spurious signals at the

power-line frequency or at harmonics of the line frequency. Abbreviated NMRR. { 'nȯr·məl ¦mōd ri'ek·shən ˌrā·shō }

normal orientation [COMPUT SCI] In optical character recognition, that determinate position which indicates that the line elements of an inputted source document appear parallel with the document's leading edge. { 'nȯr·məl ˌȯr·ē·ən'tā·shən }

normal range [COMPUT SCI] An interval within which results are expected to fall during normal operations. { 'nȯr·məl 'rānj }

North American presentation-level protocol syntax [COMMUN] A format for transmitting text and graphics that allows the transmission of large amounts of information over narrow-bandwidth transmission lines. Abbreviated NAPLPS. { ¦nȯrth ə¦mer·ə·kən ˌprē·zən ¦tā·shən ˌlev·əl ˌprōd·əˌkȯl 'sinˌtaks }

Norton equivalent circuit [ELEC] An equivalent circuit that consists of a parallel connection of a current source and a two-terminal circuit, where the current source is usually dependent on the electric signals applied to the input terminals. { ¦nȯrt·ən i'kwiv·ə·lənt ˌsər·kət }

Norton's theorem [ELEC] The theorem that the voltage across an element that is connected to two terminals of a linear network is equal to the short-circuit current between these terminals in the absence of the element, divided by the sum of the admittances between the terminals associated with the element and the network respectively. { 'nȯrt·ənz ˌthir·əm }

NOS *See* network operating system. { ¦en¦ō'es *or* 'näs }

notation *See* positional notation. { nō'tā·shən }

notch [ELECTR] Rectangular depression extending below the sweep line of the radar indicator in some types of equipment. { näch }

notch antenna [ELECTROMAG] Microwave antenna in which the radiation pattern is determined by the size and shape of a notch or slot in a radiating surface. { 'näch anˌten·ə }

notch filter [ELECTR] A band-rejection filter that produces a sharp notch in the frequency response curve of a system; used in television transmitters to provide attenuation at the low-frequency end of the channel, to prevent possible interference with the sound carrier of the next lower channel. { 'näch ˌfil·tər }

notching [ELEC] Term indicating that a predetermined number of separate impulses are required to complete operation of a relay. { 'näch·iŋ }

NOT circuit [ELECTR] A logic circuit with one input and one output that inverts the input signal at the output; that is, the output signal is a logical 1 if the input signal is a logical 0, and vice versa. Also known as inverter circuit. { 'nät ˌsər·kət }

notebook computer [COMPUT SCI] A portable computer typically weighing less than 6 pounds (3 kilograms) that has a flat-panel display and miniature hard disk drives, and is powered by rechargeable batteries. Also known as laptop computer. { 'nōtˌbük kəmˌpyüd·ər }

nought state *See* zero condition. { 'nȯt ˌstāt }

novar [ELECTR] Beam-power tube having a nine-pin base. { 'nōˌvär }

NP [COMPUT SCI] The class of decision problems for which solutions can be checked in polynomial time.

NP-complete problem [COMPUT SCI] One of the hardest problems in class NP, such that if there are any problems in class NP but not in class P, this is one of them. { ¦en¦pē kəm'plēt ˌpräb·ləm }

NP-hard [COMPUT SCI] Referring to problems at least as hard as or harder than any problem in NP. Given a method for solving an NP-hard problem, any problem in NP can be solved with only polynomially more work. { ¦en¦pē 'härd }

npin transistor [ELECTR] An *npn* transistor which has a layer of high-purity germanium between the base and collector to extend the frequency range. { 'enˌpin tran'zis·tər }

N-plus-one address instruction [COMPUT SCI] An instruction with N + 1 address parts, one of which gives the location of the next instruction to be carried out. { 'en pləs 'wən 'adˌres in ˌstrək·shən }

npnp diode *See* pnpn diode. { ¦enˌpē¦enˌpē 'dī ˌōd }

npnp transistor [ELECTR] An *npn*-junction transistor having a transition or floating layer between *p* and *n* regions, to which no ohmic connection is made. Also known as *pnpn* transistor. { ¦enˌpē¦enˌpē tran'zis·tər }

npn semiconductor [ELECTR] Double junction formed by sandwiching a thin layer of *p*-type material between two layers of *n*-type material of a semiconductor. { 'enˌpē'en 'sem·i·kənˌdək·tər }

npn transistor [ELECTR] A junction transistor having a *p*-type base between an *n*-type emitter and an *n*-type collector; the emitter should then be negative with respect to the base, and the collector should be positive with respect to the base. { 'enˌpē'en tran'zis·tər }

NPO-body [ELEC] Referring to a series of temperature-compensating capacitors that have an invariant dielectric constant over a specified temperature range. { ¦en¦pē¦ō 'bäd·ē }

np semiconductor [ELECTR] Region of transition between *n*- and *p*-type material. { ¦en¦pē 'sem·i·kənˌdək·tər }

NPX *See* numeric processor extension.

NRSC *See* National Radio Systems Committee.

NRZ *See* non-return-to-zero.

N-scan *See* N-display. { 'en ˌskan }

N-scope *See* N-display. { 'en ˌskōp }

nt *See* nit.

NTSC *See* National Television System Committee.

n-type conduction [ELECTR] The electrical conduction associated with electrons, as opposed to holes, in a semiconductor. { 'en ˌtīp kən ˌdək·shən }

N-type crystal rectifier [ELECTR] Crystal rectifier in which forward current flows when the

semiconductor is negative with respect to the metal. { 'en ,tīp ¦krist·əl 'rek·tə,fī·ər }

n-type germanium [ELECTR] Germanium to which more impurity atoms of donor type (with valence 5, such as antimony) than of acceptor type (with valence 3, such as indium) have been added, with the result that the conduction electron density exceeds the hole density. { 'en ,tīp jər'mā·nē·əm }

n-type semiconductor [ELECTR] An extrinsic semiconductor in which the conduction electron density exceeds the hole density. { 'en ,tīp 'sem·i·kən,dək·tər }

nuclear electric power generation [ELEC] Large-scale generation of electric power in which the source of energy is nuclear fission, generally in a nuclear reactor, or nuclear fusion. { 'nü·klē·ər i ¦lek·trik 'paù·ər ,jen·ə,rā·shən }

nuclear triode detector [ELECTR] A type of junction detector that has two outputs which together determine the precise location on the detector where the ionizing radiation was incident, as well as the energy of the ionizing particle. { 'nü·klē·ər 'trī,ōd di'tek·tər }

nucleus [COMPUT SCI] **1.** That portion of the control program that must always be present in main storage. **2.** The main storage area used in the nucleus (first definition) and other transient control program routines. { 'nü·klē·əs }

null character [COMPUT SCI] A control character used as a filler in data processing; may be inserted or removed from a sequence of characters without affecting the meaning of the sequence, but may affect format or control equipment. { 'nəl ,kar·ik·tər }

null-current circuit [ELECTR] A circuit used to measure current, in which the unknown current is opposed by a current resulting from applying a voltage controlled by a slide wire across a series resistor, and the slide wire is continuously adjusted so that the resulting current, as measured by a direct-current detector amplifier, is equal to zero. { 'nəl ¦kə·rənt 'sər·kət }

null-current measurement [ELECTR] Measurement of current using a null-current circuit. { 'nəl ¦kə·rənt 'mezh·ər·mənt }

null detection [ELEC] Altering of adjustable bridge circuit components, to obtain zero current. { 'nəl di,tek·shən }

null detector *See* null indicator. { 'nəl di,tek·tər }

null indicator [ENG] A galvanometer or other device that indicates when voltage or current is zero; used chiefly to determine when a bridge circuit is in balance. Also known as null detector. { 'nəl ,in·də,kād·ər }

null modem cable [COMPUT SCI] A cable that connects two local computers via serial ports without the use of a modem. { ¦nəl 'mō,dem ,kā·bəl }

NUMA machine *See* nonuniform memory access machine. { 'nü·mə mə'shēn }

number cruncher [COMPUT SCI] A computer with great power to carry out computations, designed to maximize this ability rather than to process large amounts of data. { 'nəm·bər ,krən·chər }

number record printer [COMMUN] A printer in a relay station that provides a complete automatic written record of channel numbers and the fixed routing line associated with each message that is relayed through that particular station. { 'nəm·bər ¦rek·ərd ,print·ər }

numeric [COMPUT SCI] In computers, pertaining to data composed wholly or partly of digits, as distinct from alphabetic. { nü'mer·ik }

numerical decrement *See* decrement. { nü'mer·i·kəl 'dek·rə·mənt }

numerical display device [ELECTR] Any device for visually displaying numerical figures, such as a numerical indicator tube, a device utilizing electroluminescence, or a device in which any one of a stack of transparent plastic strips engraved with digits can be illuminated by a small light at the edge of the strip. { nü'mer·i·kəl di'splā di,vīs }

numerical indicator tube [ELECTR] An electron tube capable of visually displaying numerical figures; some varieties also display alphabetical characters and commonly used symbols. { nü'mer·i·kəl 'in·də,kād·ər ,tüb }

numerical tape [COMPUT SCI] The tape required by a computer operating a machine tool. { nü'mer·i·kəl 'tāp }

numeric character *See* digit. { nü'mer·ik 'kar·ik·tər }

numeric character set [COMPUT SCI] A character set that includes only digits and certain special characters, such as plus and minus signs and control characters. { nü'mer·ik 'kar·ik·tər ,set }

numeric coding [COMPUT SCI] Code in which only digits are used, usually binary or octal. { nü'mer·ik 'kōd·iŋ }

numeric control [COMPUT SCI] The action of programs written for specialized computers which operate machine tools. { nü'mer·ik kən'trōl }

numeric coprocessor *See* numeric processor extension. { nü¦mer·ik kō'prä,ses·ər }

numeric data [COMPUT SCI] Data consisting of digits and not letters of the alphabet or special characters. { nü'mer·ik 'dad·ə }

numeric format [COMPUT SCI] The manner in which numbers are displayed in the cells of a particular spreadsheet. { nü¦mer·ik 'fȯr,mat }

numeric keypad [COMPUT SCI] A section of a computer keyboard that contains a group of keys, usually about 12, arranged in compact fashion for entering numeric characters efficiently. Also known as numeric pad. { nü'mer·ik 'kē,pad }

numeric pad *See* numeric keypad. { nü'mer·ik 'pad }

numeric pager [COMMUN] A receiver in a radio paging system that contains a display device that can show numeric messages, most commonly a telephone number. { nü'mer·ik 'pā·jər }

numeric printer [COMPUT SCI] Old type of printer which positioned its keys to print a field in one operation, rather than one digit at a time. { nü'mer·ik 'print·ər }

numeric processor extension [COMPUT SCI] A specialized integrated circuit that is added to a computer to perform high-speed floating-point

mathematical calculations. Abbreviated NPX. Also known as arithmetic processor; math coprocessor; numeric coprocessor. { nü¦mer·ik 'prä,ses·ər ik ,sten·chən }

numeric variable [COMPUT SCI] The symbolic name of a data element whose value changes during the carrying out of a computer program. { nü'mer·ik 'ver·ē·ə·bəl }

nutating antenna [ENG] An antenna system used in conical scan radar, in which a dipole or feed horn moves in a small circular orbit about the axis of a paraboloidal reflector without changing its polarization. { 'nü,tād·iŋ an'ten·ə }

nutator [ENG] A mechanical or electrical device used to move a radar beam in a circular, conical, spiral, or other manner periodically to obtain greater air surveillance than could be obtained with a stationary beam. { 'nü,tād·ər }

nuvistor [ELECTR] Electron tube in which all electrodes are cylindrical, placed one inside the other with close spacing, in a ceramic envelope. { nü'vis·tər }

NV RAM *See* nonvolatile random-access memory. { ¦en¦vē 'ram }

nybble [COMPUT SCI] A string of bits, smaller than a byte, operated on as a unit. { 'nib·əl }

Nyquist contour [CONT SYS] A directed closed path in the complex frequency plane used in constructing a Nyquist diagram, which runs upward, parallel to the whole length of the imaginary axis at an infinitesimal distance to the right of it, and returns from $+j_\infty$ to $-j_\infty$ along a semicircle of infinite radius in the right half-plane. { 'nī,kwist ,kän,tůr }

Nyquist diagram [CONT SYS] A plot in the complex plane of the open-loop transfer function as the complex frequency is varied along the Nyquist contour; used to determine stability of a control system. { 'nī,kwist ,dī·ə,gram }

Nyquist interval [COMMUN] Maximum separation in time which can be given to regularly spaced instantaneous samples of a wave of specified bandwidth for complete determination of the waveform of the signal. { 'nī,kwist ,in·tər·val }

Nyquist rate [COMMUN] The maximum rate at which code elements can be unambiguously resolved in a communications channel with a limited range of frequencies; equal to twice the frequency range. { 'nī,kwist ,rāt }

Nyquist sampling [COMMUN] The periodic sampling of audio or video signals, in order to preserve their information content, at a rate equal to twice the highest frequency to be preserved. { 'nī,kwist ,sam·pliŋ }

Nyquist stability criterion *See* Nyquist stability theorem. { 'nī,kwist stə'bil·əd·ē krī,tir·ē·ən }

Nyquist stability theorem [CONT SYS] The theorem that the net number of counterclockwise rotations about the origin of the complex plane carried out by the value of an analytic function of a complex variable, as its argument is varied around the Nyquist contour, is equal to the number of poles of the variable in the right half-plane minus the number of zeros in the right half-plane. Also known as Nyquist stability criterion. { 'nī,kwist stə'bil·əd·ē ,thir·əm }

Nyquist's theorem [ELECTR] The mean square noise voltage across a resistance in thermal equilibrium is four times the product of the resistance, Boltzmann's constant, the absolute temperature, and the frequency range within which the voltage is measured. { 'nī,kwists ,thir·əm }

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OASIS *See* Open-Access Same-Time Information System. { ,o'ā·səs }

O attenuator [ELECTR] A dissipative attenuator in which the circuit has the form of a ladder with two rungs, and the resistances across the rungs are unequal, so that the impedances across the two pairs of terminals are unequal. { 'ō ə'ten·yə ,wād·ər }

OBA *See* octave-band analyzer.

object [COMPUT SCI] **1.** Any collection of related items. **2.** The name of a single element in an object-oriented programming language. { 'äb·jekt }

object code [COMPUT SCI] The statements generated from source code by a compiler, constituting an intermediate step in the translation of source code into executable machine language. { 'äb ,jekt ,kōd }

object computer [COMPUT SCI] The computer processing an object program; the same computer compiling the source program could, therefore, be called the source computer; such terminology is seldom used in practice. { 'äb·jekt kəm ,pyüd·ər }

object deck [COMPUT SCI] The set of machine-readable computer instructions produced by a compiler, either in absolute format (that is, containing only fixed addresses) or, more frequently, in relocatable format. { 'äb·jekt ,dek }

object language [COMPUT SCI] The intended and desired output language in the translation or conversion of information from one language to another. { 'äb·jekt ,laŋ·gwij }

object library *See* object program library. { 'äb·jekt'lī,brer·ē }

Object Management Group object model [COMPUT SCI] A model that defines common object semantics in an object-oriented computer system. Abbreviated OMG object model. { ¦äb·jikt ¦man·ij·mənt ¦grüp 'äb·jikt ,mäd·əl }

object module [COMPUT SCI] The computer language program prepared by an assembler or a compiler after acting on a programmer-written source program. { 'äb·jekt ,mäj·ūl }

object-oriented graphics *See* vector graphics. { ¦äb,jekt ,ór·ē,en·təd 'graf·iks }

object-oriented interface [COMPUT SCI] A user interface that employs icons and a mouse. { ¦äb ,jekt ,ór·ē,en·təd 'in·tər,fās }

object-oriented language [COMPUT SCI] A programming language consisting of a sequence of commands directed at objects. { ¦äb,jekt ,ór·ē ,en·təd 'laŋ·gwij }

object-oriented programming [COMPUT SCI] A computer programming methodology that focuses on data rather than processes, with programs composed of self-sufficient modules (objects) containing all the information needed to manipulate a data structure. Abbreviated OOP. { ¦äb,jekt ,ór·ē,en·təd 'prō,gram·iŋ }

object program [COMPUT SCI] The computer language program prepared by an assembler or a compiler after acting on a programmer-written source program. Also known as object routine; target program; target routine. { 'äb·jekt ,prō ,gram }

object program library [COMPUT SCI] A collection of computer programs in the form of relocatable instructions, which reside on, and may be read from, a mass storage device. Also known as object library. { 'äb·jekt ,prō,gram ,lī,brer·ē }

object request broker [COMPUT SCI] The central component of CORBA, which passes requests from clients to the objects on which they are invoked. Abbreviated ORB. { 'äb·jikt ri¦kwest ,brō·kər }

object routine *See* object program. { 'äb·jekt rü ,tēn }

object time [COMPUT SCI] The time during which execution of an object program is carried out. { 'äb·jekt ,tīm }

oblique-incidence transmission [COMMUN] Transmission of a radio wave obliquely up to the ionosphere and down again. { ə'blēk ¦in·sə·dəns tranz'mish·ən }

observability [CONT SYS] Property of a system for which observation of the output variables at all times is sufficient to determine the initial values of all the state variables. { əb,zər·və'bil·əd·ē }

observation spillover [CONT SYS] The part of the sensor output of an active control system caused by modes that have been omited from the control algorithm in the process of model reduction. { ,äb·zər'vā·shən 'spil,ō·vər }

observer [CONT SYS] A linear system B driven by the inputs and outputs of another linear system A which produces an output that converges to some linear function of the state of system A.