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# **McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS**

**Sixth  
Edition**

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**On the cover: Representation of a fullerene molecule with a noble gas atom trapped inside. At the Permian-Triassic sedimentary boundary the noble gases helium and argon have been found trapped inside fullerenes. They exhibit isotope ratios quite similar to those found in meteorites, suggesting that a fireball meteorite or asteroid exploded when it hit the Earth, causing major changes in the environment. (Image copyright © Dr. Luann Becker. Reproduced with permission.)**

Over the six editions of the Dictionary, material has been drawn from the following references: G. M. Garrity et al., *Taxonomic Outline of the Prokaryotes*, Release 2, Springer-Verlag, January 2002; D. W. Linzey, *Vertebrate Biology*, McGraw-Hill, 2001; J. A. Pechenik, *Biology of the Invertebrates*, 4th ed., McGraw-Hill, 2000; U.S. Air Force *Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; *A DOD Glossary of Mapping, Charting and Geodetic Terms*, Department of Defense, 1967; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, National Aeronautics and Space Administration, 1965; *Glossary of Stinfo Terminology*, Office of Aerospace Research, U.S. Air Force, 1963; *Naval Dictionary of Electronic, Technical, and Imperative Terms*, Bureau of Naval Personnel, 1962; R. E. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *ADP Glossary*, Department of the Navy, NAVSO P-3097; *Glossary of Air Traffic Control Terms*, Federal Aviation Agency; *A Glossary of Range Terminology, White Sands Missile Range, New Mexico*, National Bureau of Standards, AD 467-424; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission.

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**conditional distribution** [STAT] If  $W$  and  $Z$  are random variables with discrete values  $w_1, w_2, \dots$ , and  $z_1, z_2, \dots$ , the conditional distribution of  $W$  given  $Z = z$  is the distribution which assigns to  $w_i$ ,  $i = 1, 2, \dots$ , the conditional probability of  $W = w_i$  given  $Z = z$ . { kən'dish-ən-əl dis-trə'byū-shən }

**conditional expectation** [MATH] If  $X$  is a random variable on a probability space  $(\Omega, \mathcal{F}, P)$ , the conditional expectation of  $X$  with respect to a given sub  $\sigma$ -field  $F'$  of  $F$  is an  $F'$ -measurable random variable whose expected value over any set in  $F'$  is equal to the expected value of  $X$  over this set. [STAT] The expected value of a conditional distribution. { kən'dish-ən-əl ek-spek'tā-shən }

**conditional expression** [COMPUT SCI] A COBOL language expression which is either true or false, depending upon the status of the variables within the expression. { kən'dish-ən-əl ik'spresh-ən }

**conditional frequency** [STAT] If  $r$  and  $s$  are possible outcomes of an experiment which is performed  $n$  times, the conditional frequency of  $s$  given that  $r$  has occurred is the ratio of the number of times both  $r$  and  $s$  have occurred to the number of times  $r$  has occurred. { kən'dish-ən-əl 'frē-kwən-sē }

**conditional implication** See implication. { kən'dish-ən-əl ,im-plə'kā-shən }

**conditional inequality** [MATH] An inequality which fails to hold true for some of the values of the variable involved. { kən'dish-ən-əl ,in-i'kwil-əd-ē }

**conditional instability** [METEOROL] The state of a column of air in the atmosphere when its lapse rate of temperature is less than the dry adiabatic lapse rate but greater than the saturation adiabatic lapse rate. { kən'dish-ən-əl ,in-stə'bil-əd-ē }

**conditional jump** [COMPUT SCI] A computer instruction that will cause the proper one of two or more addresses to be used in obtaining the next instruction, depending on some property of a numerical expression that may be the result of some previous instruction. Also known as conditional branch; conditional transfer; decision instruction; discrimination; IF statement. { kən'dish-ən-əl 'jəmp }

**conditional lethal mutant** [GEN] A lethal mutant that expresses characteristics of the wild type when grown under certain conditions, as at a particular temperature, and mutant characteristics under other conditions. { kən'dish-ən-əl 'lē-thəl 'myūt-ənt }

**conditionally compact set** [MATH] A set whose closure is compact. Also known as relatively compact set. { kən'dish-ən-əl-ē 'kām-pakt ,set }

**conditionally periodic motion** [MECH] Motion of a system in which each of the coordinates undergoes simple periodic motion, but the associated frequencies are not all rational fractions of each other so that the complete motion is not simply periodic. { kən'dish-ən-əl-ē ,pir-ē'jad-ik ,mō-shən }

**conditionally stable circuit** [ELECTR] A circuit which is stable for certain values of input signal and gain, and unstable for other values. { kən'dish-ən-əl-ē 'stā-bəl ,sər-kət }

**conditional probability** [STAT] The probability that a second event will be  $B$  if the first event is  $A$ , expressed as  $P(B/A)$ . { kən'dish-ən-əl ,prəb-ə'bil-əd-ē }

**conditional replenishment** [COMMUN] A form of differential pulse-code modulation in which the only information transmitted consists of addresses specifying the locations of picture samples in the moving area, and information by which the intensities of moving area picture samples can be reconstructed at the receiver. { kən'dish-ən-əl ri'plen-ish-mənt }

**conditional statement** [COMPUT SCI] A statement in a computer program that is executed only when a certain condition is satisfied. { kən'dish-ən-əl 'stāt-mənt }

**conditional transfer** See conditional jump. { kən'dish-ən-əl 'tranz-fər }

**condition code** [COMPUT SCI] Portion of a program status word indicating the outcome of the most recently executed arithmetic or boolean operation. { kən'dish-ən ,kōd }

**conditioned line** [COMPUT SCI] A communications channel, usually a telephone line, that has been adapted for data transmission. { kən'dish-ənd 'līn }

**conditioned reflex** [PSYCH] Response of an organism to a stimulus which was inadequate to elicit the response until paired for one or more times with an adequate stimulus. { kən'dish-ənd 'rē-fleks }

**conditioned stop instruction** [COMPUT SCI] A computer

some given condition exists, such as the specific setting of a switch on a computer console. { kən'dish-ənd 'stāp in'strek-shən }

**condition entries** [COMPUT SCI] The upper-right-hand portion of a decision table, indicating, for each of the conditions, whether the condition satisfies various criteria listed in the condition stub, or the values of various parameters listed in the condition stub. { kən'dish-ən ,en-trēz }

**conditioning** [ELECTR] Equipment modifications or adjustments necessary to match transmission levels and impedances or to provide equalization between facilities. [GRAPHICS] Restoration of microfilm for use after it has been stored for a period of time. [SCITECH] Subjecting a material or organism to a stipulated treatment or stimulus so that it will respond in a uniform and desired manner to subsequent testing or processing. { kən'dish-ən-īŋ }

**condition portion** [COMPUT SCI] The upper portion of a decision table, comprising the condition stub and condition entries. { kən'dish-ən ,pōr-shən }

**condition stub** [COMPUT SCI] The upper-left-hand portion of a decision table, consisting of a single column listing various criteria or parameters which are used to specify the conditions. { kən'dish-ən ,stəb }

**Condon-Shortley-Wigner phase convention** [QUANT MECH] Convention relating the phases of states having the same eigenvalue of  $J^2 = J_x^2 + J_y^2 + J_z^2$ , and different eigenvalues of  $J_z$ , where  $\mathbf{J}$  is the total angular momentum, according to which the matrix elements of  $\mathbf{J}_+ = J_x + iJ_y$  and  $\mathbf{J}_- = J_x - iJ_y$  between such states are real. { 'kən-dən 'shōrt-lē 'wig-nər 'fās kən-ven-shən }

**condor** [NAV] A continuous-wave navigation system, similar to benito, that automatically measures bearing and distance from a single ground station; the distance is determined by phase comparison and the bearing by automatic direction finding. [VERT ZOO] *Vultur gryphus*. A large American vulture having a bare head and neck, dull black plumage, and a white neck ruff. { 'kän,dōr }

**Condor** [ORD] A U.S. Navy air-to-surface missile that uses optoelectronic guidance, developed for use beyond the range of antiaircraft guns which protect heavily defended ground targets; range is about 50 miles (80 kilometers). { 'kän,dōr }

**conductance** [ELEC] The real part of the admittance of a circuit; when the impedance contains no reactance, as in a direct-current circuit, it is the reciprocal of resistance, and is thus a measure of the ability of the circuit to conduct electricity. Also known as electrical conductance. Designated  $G$ . [FL MECH] For a component of a vacuum system, the amount of a gas that flows through divided by the pressure difference across the component. [THERMO] See thermal conductance. { kən'dək-təns }

**conductance coefficient** [PHYS CHEM] The ratio of the equivalent conductance of an electrolyte, at a given concentration of solute, to the limiting equivalent conductance of the electrolyte as the concentration of the electrolyte approaches 0. { kən'dək-təns ,kō-ə'fish-ənt }

**conductance-variation method** [ELEC] A technique for measuring low admittances; measurements in a parallel-resonance circuit with the terminals open-circuited, with the unknown admittance connected, and then with the unknown admittance replaced by a known conductance standard are made; from them the unknown can be calculated. { kən'dək-təns ver-ē'ā-shən ,meth-əd }

**conducted interference** [COMMUN] Interfering signals arriving by direct coupling such as on communications and power lines. { kən'dək-təd ,in-tər'fir-əns }

**conductimetry** [CHEM] The scientific study of conductance measurements of solutions; to avoid electrolytic complications, conductance measurements are usually taken with alternating current. { kən'dək'tim-ə-trē }

**conducting polymer** [MATER] A plastic having high conductivity, approaching that of metals. { kən'dək-tīŋ 'pāl-ə-mər }

**conduction** [ELEC] The passage of electric charge, which can occur by a variety of processes, such as the passage of electrons or ionized atoms. Also known as electrical conduction. [PHYS] Transmission of energy by a medium which does not involve movement of the medium itself. { kən'dək-shən }