

Department of Physics

A

Adiabatic process – **ntg;gkhw;wkpy;yh epiy** - is a process in which no heat enters or leaves a system. An adiabatic expansion results in cooling of a gas whereas an adiabatic compression has the opposite effect.

Advection- fpilk;l mirT - is a process of transfer of atmospheric properties by horizontal motion in the atmosphere.

Alpha Decay- My;gh rpijT - is a radioactive disintegration process in which the parent nucleus decays spontaneously into an alpha particle and a daughter nucleus.

Alpha particle- My;gh Jfs; - is the nucleus of a helium atom carrying a positive charge of $2e$.

Alternating current-khWjpir kpd;Ndhl;lk;- is an electric current that periodically reverses its direction in the circuit, with a frequency independent of the constants of the circuit.

Amplitude,- tPr;R is the peak value of an alternating quantity in either the positive or negative direction and is particularly applied to the case of a sinusoidal vibration.

Angstrom – Mk;]l;uhq;- is the unit of wavelength of light. $1 \text{ Angstrom} = 10^{-8} \text{ cm}$. There is a bigger unit for measuring the wavelength of infrared light; it is called a milli-micron and is equal to 10^{-7} cm . Micron = 10^{-4} cm , is a still bigger unit.

Angular displacement: Nfhz ,lg;ngau;r;rp- The angle through which a point, line or body is rotated, in a specific direction and about a specified axis.

Angular velocity-Nfhz jpirNtfk;- is the rate at which a body rotates about an axis, expressed in radians per second. It is a vector quantity equal to the linear velocity divided by the radius.

Anion- Neu; madp - is an ion that carries a negative charge and in electrolysis moves towards the anode.

Anode –MNdhL -is the positive electrode of an electrolytic cell, discharge tube, valve or a rectifier.

Antenna- miyf;fk;gk;- is the term used in scientific and technical literature for "aerial". It was originally an American term.

Atomic number-mZ vz;- is the number of protons contained in the nucleus of an atom or the number of electrons revolving around the nucleus.

Atomic energy – **mZ Mw;wy**; -is liberated by the disintegration of atom. Elements like uranium, etc., can be disintegrated to release atomic energy. The energy released in the fission of a single atom of uranium is about one million times the energy released per atom of the combustion of a fuel like coal.

Atomic pile – **mZ Ftpay**; - is a nuclear chain reactor.

Atomic Volume- **mZ gUkz**; - is the volumes in the solid state of one mole of an element.

Atomic Weight – **mZ vil** - is the weight of an atom of hydrogen taken as the standard; the respective weights of the atoms of all other substances are expressed in terms of it. So, when it is stated that the atomic weight of iron is 56, it is meant that the atom of iron is 56 times as heavy as the atom of hydrogen.

B

Blackbody – **fUk;nghUs**; - is the body whose surface absorbs all radiations incident on it and thus neither reflects nor transmits any radiation.

Boiling point- **nfhjpepiy**- is the temperature of a liquid at which visible evaporation occurs throughout the bulk of the liquid and at which the vapour pressure of the liquid equals the external atmospheric pressure. It is the temperature at which liquid and vapour can exist together in equilibrium at a given pressure.

Bomb Calorimeter- **ghk; fNyhupkhzp**- is a device used for measuring the heat evolved by the combustion of a fuel.

Bond energy- **gpizg;ghw;wy**; - is the energy required to break a chemical bond between two atoms in a molecule. The bond energy depends on the type of atoms and on the nature of the molecule.

Boyle's law- **ghapy; tpjp**- If a given mass of a gas is compressed at constant temperature the product of the pressure and volume remains' constant.

Brownian movement – **gpnut;dpad; ,af;fk**; - is the unceasing and irregular motion of small particles (about 1 cm in diameter) when held in suspension in a liquid.

Buoyancy: **kpjj;jy**;- Archimedes' principle states that if a body is wholly or partly immersed in a fluid, it experiences an upward force equal to the weight of the fluid which would fill the space occupied by the immersed part of the body.

C

Calibration- $m_s T_j p U_j; j k$; - is the determination of the absolute values of arbitrary indications of an instrument.

Capacitance – $k p d; N j f; f p$ - the ability of a system to store an electric charge.

Centre of gravity- $G t p < u; g; G i k a k$; - a point from which the weight of a body or system may be considered to act. In uniform gravity it is the same as the centre of mass.

Centripetal force – $i k a N e h f; F t p i r$ - a force which acts on a body moving in a circular path and is directed towards the centre around which the body is moving.

Calorie- $f N y h u p$ - is the unit of heat. It is the amount of heat required to raise the temperature of one gram of water through 1°C .

Chain reaction- $n j h l u; t p i d$ - is a series of nuclear transformations initiated by a single nuclear fission.

Charge- $k p d; R i k$ - is a property of some elementary particles that causes them to exert force on one another.

Charles' Law – $r h u; y j; t p j p$ - (Also known as Gay-Lussac's Law): The volume of a fixed mass of any gas increases for each degree rise in temperature by - a constant fraction of the volume at 0°C to 100°C , the pressure being constant.

Critical temperature – $k h W n t g; g e p i y$ - is the temperature above which a substance can exist only in its gaseous state and cannot be liquified regardless of the magnitude of pressure exerted on it. In metallurgy, it is the temperature at which a metal or alloy begins to change during heating or cooling.

D

Density- $m l u; j; j p$ - is the mass per unit volume of a substance. In SI units, it is measured in kg/m^3 .

Dew point- $g d p g L e p i y$ - is the highest temperature a surface may have in order that dew may condense on the surface from a humid atmosphere.

Decay –**рpijT khwpyp-** The **decay constant** is the fraction of the number of atoms that **decay** in 1 second. It is the **constant** λ in the **decay** equation: $dN/dt = -\lambda N$ The - sign indicates **decay**, dN/dt is the number of **decays** per second (also known as 'Activity') and N is the number of atoms present.

Decibel –**nlrpgy;-** The **decibel** (dB) is a logarithmic unit used to express the ratio of two values of a physical quantity, often power or intensity. One of these values is often a standard reference value, in which case the **decibel** is used to express the level of the other value relative to this reference.

Dielectric – **kpd; flj;jh epiy** - is a substance that is capable of sustaining an electrical stress i.e. an insulator.

Diffraction –**tpsрк;G tpisT** - the process by which a beam of light or other system of waves is spread out as a result of passing through a narrow aperture or across an edge, typically accompanied by interference between the wave forms produced.

Dispersion – **xspr;rpjwy;** - the action or process of distributing things or people over a wide area.

Diffusion- guty;- is the process by which fluids and solids mix intimately with one another due to the kinetic motions of the particles.

Diode- ilNahL- is any electronic device with only two electrodes. Diodes are usually used as rectifiers.

E

Elasticity –**kpd;Ndhl;lk;** - is the property of a body or substance by which it tends to resume its original size and shape after being subjected to deforming forces.

Electret –**kpd;dk;** - is a piece of solid matter which retains a permanent electron polarisation like a permanent magnet.

Electrosmosis-kpd; rt;T+L guty; - is the passage of an electrolyte through a membrane or porous partition under the influence of an electric current.

Emission-ckpo;T- is the liberation of electrons or electromagnetic radiations from the surface of a solid or liquid, usually electrons from a metal.

Equilibrium: rkepiy - A system of coplanar forces is in equilibrium when the algebraic sums of the resolved parts of the forces in any two directions are both zero and the algebraic sum of the moments of the forces about any point in their plane is zero.

Escape velocity- v_e ; - is the velocity that 'a projectile space probe etc., must reach in order' to escape the gravitational field of a planet or the moon. It depends on the mass and diameter of the planet. The escape velocity is about 11200 m/sec. for the Earth.

Fatigue- N_f ; - is the progressive decrease of a property due to repeated stress.

Ferromagnetism- χ ; - is a property of certain solid substances that, having a large positive magnetic susceptibility, are capable of being magnetised by weak magnetic fields. The chief ferromagnetic elements are iron, cobalt and nickel.

Flash point – T_{fp} ; - is the lowest temperature at which a substance will provide sufficient inflammable vapour to ignite upon the application of a small flame.

Fluid – ρ ; - is a collective term embracing liquids and gases.

Fluorescence- λ_{em} ; - is the absorption of radiant energy by a substance, immediately followed by its remission in the form of visible light of a greater wavelength.

Freezing mixture- T_m ; - is a mixture of ice with salt so as to lower melting point of ice and keep other bodies cooler for longer time.

Fuse- I_f ; - is a device to prevent unduly high current from passing through an electric circuit by breaking contact.

Fusion- T_m ; - is the change of the state of a substance from solid to liquid which occurs at a definite temperature at a given applied pressure.

G

Gamma rays- γ ; - are electromagnetic radiations emitted spontaneously by certain radioactive substances in the process of a nuclear transition.

Gauss's theorem- $\oint \mathbf{E} \cdot d\mathbf{A} = \frac{Q_{enc}}{\epsilon_0}$; - is total electric flux acting normal to any closed surface drawn in an electric field is equal to the total charge of electricity inside the closed surface.

Generator – $P = VI$; - is a machine for converting mechanical energy into electrical energy.

Ground State – E_0 ; - the lowest energy state of an atom or other particle.

H

Heat exchanger-ntg;g gupkhw;wp- is a device for transferring heat from one fluid to another without the fluids coming in contact. Its purpose is either to regulate the temperatures of the fluids for optimum efficiency of some process, or to make use of heat that would otherwise be wasted.

Hook-up-nfhf;fp- is a temporary connection between electrical or electronic circuits or a temporary communications channel.

Horse Power-Fjpiu jpwd;- is the practical unit of power—the power of an agent which can work at the rate of 550 foot-pounds per second or 33,000 foot-pounds per minute. MP = 746, watts.

Hypermetropia- njhiy ghu;it NfhshW- is a defect of eye in which near objects are not distinctly visible. This is also called long-sightedness.

I

Ice point-gdp epiy- is the temperature of equilibrium of ice and water at standard pressure.

Impulse – J}z;L epfo;T- a sudden strong and unreflective urge or desire to act.

Incandescence – nts;nshsp- is the emission of visible radiation from a substance at high temperature.

Incandescent lamp-ntg;g tpsf;F- is an electric lamp in which light is produced by the heating effect of a filament of carbon, osmium or tungsten.

Incidence angle –gLNfhzk;- is the angle between the ray striking a reflecting or refracting surface and the normal to the surface at the point of incidence.

Inelastic-kPs; jpwdw;w- not elastic.

Inertia-epiykk;- is property of matter by which it resists change in its state of rest or in its direction of motion.

Intensity – nrwpT- is the rate of energy transfer per unit area normal to the direction of propagation at any given point.

Ion –**madp**-is electrically charged atom or group of atoms.

Isothermal –**ntg;gr;rkepiy**-is a line joining all points on a graph that correspond to the same temperature.

Isothermal process-**ntg;grkepiy epfo;T**- is a process that occurs at a constant temperature.

Isotopes –**[NrhNlhg;-**arc atoms of an element having the same atomic number but different atomic weights.

J

Jet engine -**n[l; vQ;rp d;-** is aero-engine deriving its thrust from the high velocity of the gases it ejects.

Joule-**[Py;-** is the unit of work or energy. It is equal to 10^7 ergs. It is the energy consumed in one second in an electrical circuit through which a current energy of one ampere is flowing against a potential difference of one volt.

Joule's effect-**[Py; tpisT**- is the liberation of heat by the passage of a current through an electric conductor, due to its resistance.

K

Kilowatt-hour –**fpNythl; kzp** - is a unit of energy equivalent to the energy produced when power of 1 kilowatt is expended for 1 hour.

Kinetic energy-**,af;f Mw;wy;-** is the energy possessed by a particle or body by virtue of its motion.

Kinematics- **,af;f tbtpay;-**the branch of mechanics concerned with the motion of objects without reference to the forces which cause the motion.

L

Laminar flow- $mL;f\ gha;T$ - is steady flow in which the fluid moves in parallel layers or laminae, the velocities of the fluid particles within each lamina not being necessarily equal.

Longitudinal wave- $nel;liy$ -a wave vibrating in the direction of which the wave travel.

Laser- Nyru;- is a source of intense mono-chromatic coherent radiation in the visible, ultraviolet and infrared regions of the spectrum.

Latent heat- $cs;shu;e;j\ ntg;gepiy$ - is the quantity of heat required to convert 1 gm of a substance from one form into another. The unit is calories per gram.

Lightning – $xs;pu;T$ -is a disruptive discharge of electricity between a charged cloud and the earth or between two clouds. It is caused when the difference of potentials between a cloud and earth or between two clouds becomes so large that electricity passes across the gap.

Lightning conductor- $xspf;flj;jp$ - is a conductor of electricity installed in a structure to save it from damage. It neutralises the electric charge of the clouds coming in its contact or carries it to the earth.

Light Year- $xspahz;L$ - is the distance light travels in one mean solar year, at the speed of 1,86,000 miles per second. It is equal to 5,880,000,000 miles. It is used as a unit for measuring stellar distances.

M

Magnetic circuit – $fhe;j\ Rw;W$ - is the completely closed path described by a given set of lines of magnetic flux.

Magnetic field – $fhe;j\ Gyk$;-is the field, of force surrounding a magnetic pole or a current flowing through a conductor, in which there is a magnetic flux.

Magnetic flux- $fhe;jghak$; is the number of **magnetic** field lines (also called "**magnetic flux density**") passing through a closed surface (such as a conducting coil). The SI unit of **magnetic flux** is the weber (Wb) (in derived units: volt-seconds). The CGS unit is the maxwell.

Mass defect- $epiw\ FiwghL$ -Nuclear binding energy is the energy that would be required to disassemble the nucleus of an atom into its component parts. These component parts are neutrons and protons, which are collectively called nucleons.

Mariner's Compass-khupdu; Ks; - is an apparatus for determining direction, graduated to indicate 33 directions. The "N" point on the dial indicates north pole and the "S" point, south pole.

Mechanical equivalent of heat-ntg;g ,af;fk;- (Joule's Constant) is the ratio of amount of work done and the quantity of heat produced in a mechanical work. It is a constant.

Modulus of Elasticity-epiy jfT kPl;rp- is the ratio of stress to strain for a body obeying Hooke's law.

Modulation –rupnra;jy;- In electronics and telecommunications, **modulation** is the process of varying one or more properties of a periodic waveform, called the carrier signal, with a **modulating** signal that typically contains information to be transmitted.

Molecular weight-%yf;\$W vil- is the sum of the atomic weights of all the atoms contained in a molecule.

Momentum -,aq;F tpir- is the product of the mass and the velocity of the particle. It is a vector quantity directed through the particle in the direction of motion.

Myopia – fpl;lg;ghu;it - is a defect of vision blurring distant objects. Also called shortsightedness. It is corrected by the use of concave lenses.

N

Negative el-vjpu;kpd; Rik- is an electron with a negative charge as opposed to the positively charged electron or positron.

Neutron-epAl;uhd;- is an elementary particle having zero charge and a rest mass of 1.674×10^{-27} kg, that is a constitute of the atomic nucleus.

Newton-epAl;ld;- is the SI unit of force, defined as the force that provides a mass of one kilogramme with an acceleration of one metre per second per second.

Nuclear fission-mZf;fU ,izT- is splitting up of a heavy atom (e.g., uranium in two or more new atoms) with enormous release of energy.

Nuclear chain reaction –mZf;fU njhlu; tpiz- occurs in radioactive elements charging the nuclei of atoms and yielding atoms of different elements or isotopes of the original elements.

Nucleon –epAf;spahd;- is the collective term for a "proton" or "neutron" i.e., for a constituent of an atomic nucleus.

O

Ohm- Xk; is the SI unit of electrical resistance, defined as the resistance between two points on a conductor through which a current of one ampere flows as a result of a potential difference of one volt applied between the points, the conductor not being a source of electromagnetic force.

Ohm's Law-Xk; tpjp- states that the electric current in any conductor is proportional to the potential difference between its ends, other factors remaining constant.

Optical Centre-xsp ikak;- is a point on the surface of a lens where the optical axis intersects the surface.

Oscillate-miyT- move or swing back and forth in a regular rhythm.

P

Parallel-fpilk;lk;- side by side and having the same distance continuously between them.

Path difference-top Ntw;Wik- path difference is the difference in path traversed by the two waves, measured in terms of wavelength of the associated wave. It has a direct relation with phase difference. Phase difference decides the nature of interference pattern but phase difference is found out by path difference.

Period-fhy tl;lk;- is the time taken by an object to complete one orbit.

Phase difference-fl;l NtWghL- is the fraction of an oscillation between the vibrations of two oscillating particles, expressed in degrees.

Paramagnetism -ghuhfhe;jk;- is the property of substances that have a positive magnetic susceptibility.

Partial pressure-gFjp mOj;jk;- is the pressure of a gas in a mixture of gases occupying a fixed volume of the pressure that the gas would exert if it has alone occupied the total volume.

Pascal's principle-gh];fy; tpjp- states that pressure applied at any point of a fluid at rest is transmitted without loss to all other parts of the fluid.

Pauli's Exclusion Principle-ngsyyp Nfhl;ghL- is the principle that no two fermions can exist in identical quantum states, thus no two electrons in an atom can be identical in their quantum numbers.

Persistence of vision- **jhf;Fgpbj;jy;-** is the impression of an image on the retina for an instant after its withdrawal. Successive images produce an impression of continuity. The principle is used in cinema.

Presbyopia- **fpl;lg;ghu;it FiwghL-** is a defect of vision in which objects are not clearly visible due to weakening of eye muscles in old age. It is overcome by the use of suitable lenses in the same frame.

Proton- **GNuhl;lhd;-** is a positive hydrogen ion; it is 1836 times heavier than electron.

Pyrometer- **igNuh kPl;lu;-** is an instrument used for measuring high temperatures.

Q

Quantum Theory- **Fthz;lk;** is a theory which is based on Planck's radiation law. The concept of discontinuity of energy was introduced. According to this theory, changes of energy in atoms and molecules occur only in discrete quantities, each an integral multiple of a fundamental quantity. The fundamental quantity is generally referred to as quantum.

Quartz- **gbfk;-** is a double refracting crystal, optically uniaxial and positive and rotating the plane of polarization to the left or right according to the variety, and to a different extent for different colors.

R

Radiation- **fjpu; tPr;R-** is transmission of heat without any carrier in between, e.g., transmission of heat from sun to the earth's atmosphere.

Radioactivity- **fjpupaf;fk;-** is the phenomenon of spontaneous disintegration of unstable- atomic nuclei to give more stable product nuclei. It is usually associated with the emission of alpha, beta and gamma rays.

Radio frequency- **NubNah mjpu;ntz;-** is electromagnetic radiation in the frequency band 3 kilohertz to 300 gigahertz.

Radiography- **fjpupaf;fkhdp-** is the production of photographs of the internal structure of bodies, opaque to visible light, by the radiation from X rays or by gamma rays from radioactive substances.

Raman effect –uhkd; tpisT- is the phenomenon of scattering of light when monochromatic light passes through a transparent medium.

Reactor-ci- is an apparatus for generation of atomic energy.

Rectifier – jpUj;jp- is a device for converting an alternating current into a direct one.

Refraction –xsp tpyfy;- is a deviation of light passing from one medium into another.

S

Saturated Vapour-nrwpT+l;lgl;l ePuhtp- is a vapour which is in dynamic equilibrium with its liquid at a given temperature. It can thus hold no more substance in the gaseous phase unless the temperature is raised.

Scalar quantity-];Nfyhu;- means quantity which has only magnitude and no direction, e.g., mass, length, etc.

Scattering-rpjwy;- is the deflection of light energy by fine particles of liquid, solid or gaseous matter from the main direction of a beam.

Short circuit-kpd; gpio- is the direct flow of current between two points of different potential.

Specific heat-ntg;g Vw;G- is the quantity of heat required to raise the temperature of one grain of substance by one degree centigrade.

Static electricity –epiy kpd; -(frictional electricity) is the electricity generated by friction.

Storage battery –kpd; fyd;-(**accumulator**) is a cell which is charged to store electricity by chemical reaction.

T

Telemetry –nraw;ifNfhspay;- is a means of making measurement in which the measured quantity is distance from the recording apparatus and the data is sent over a particular telecommunication system from the measuring position to the recording position.

Total internal reflection-KO mfvjpnuhspg;G- is the phenomenon in which light when transversing from an optically denser to an optically rarer medium strikes the common surface of the two media at such an angle that it is reflected completely in the former medium.

U

Ultimate strength- ,Wjpahw;wy;- is the limited stress at which a material completely fractures or breaks down or crushes.

Ultrasonic-kPnahsp- Means sound waves of high frequency (12,000 Cycles per second and higher) inaudible to human ear.

Ultraviolet rays-Gw Cjh fjpu;- are invisible electromagnetic rays of wavelength less than 3,000 angstrom.

Unsaturated vapour- nrwpT+l;lg;gl ePuhtp- is a vapour at a certain temperature that does not contain the maximum amount of the substance in the gaseous phase.

V

Velocity – jpir Ntfk;-is the rate of change of position of a body in a given time in a definite direction.

Viscosity- ghFepiy- is the property of a liquid tending to resist the relative motion within its layers.

Voltage- kpd;dOj;jk; - is the electromotive force in electricity.

Valency - ,id jpwd;-is the combining ability of an element with respect to hydrogen (e.g., in water, H₂O, oxygen has a valency of 2).

Thank you