

A.C. Generator

A device, such as a dynamo, used to generate alternating current (a.c)

Acceleration

The rate of change of an object's velocity

Acceleration due to gravity

The acceleration of an object falling freely under gravity

Acceleration of free fall

See acceleration due to gravity

Activity

The rate at which nuclei decay in a sample of a radioactive substance

Air resistance

The frictional force on an object moving through air.

Alpha Decay

The decay of a radioactive nucleus by emission of an α – particle

Alpha Particle (α -Particle)

A particle of two protons and two neutrons emitted by an atomic nucleus during radioactive decay.

Alternating Current (a.c)

Electric current that flows first one way, then the other, in a circuit.

Ammeter

A meter for measuring electric current

Amplitude

The greatest height of a wave above its undisturbed level.

Angle of Incidence

The angle between an incident ray and the normal to the surface at the point where it meets a surface.

Angle of Reflection

The angle between a reflected ray and the normal to the surface at the point where it reflects from a surface.

Angle of Refraction

The angle between a refracted ray and the normal to the surface at the point where it passes from one material to another.

Average Speed

Speed calculated from total distance travelled divided by total time taken

Axis

The line passing through the center of a lens, perpendicular to its surface.

Background Radiation

The radiation from the environment to which we are exposed all the time.

Barometer

An instrument used to measure atmospheric pressure

Battery

Two or more electrical cells connected together in series; the word may also be used to mean a single cell.

Becquerel (Bq)

The SI unit of activity; 1 Bq= one decay per second

Beta Decay

The decay of a radioactive nucleus by emission of a beta particle.

Beta Particle (β -Particle)

A particle (an electron) emitted by an atomic nucleus during radioactive decay.

Biomass Fuel

A material, recently living, used as a fuel.

Boiling Point

The temperature at which a liquid changes to a gas (at constant pressure)

Boyle's Law

The law that relates the pressure and volume of a fixed mass of gas ($pV = \text{constant}$ at constant temperature)

Brownian Motion

The motion of small particles suspended in a liquid or gas, caused by molecular bombardment.

Cell

A device that provides a voltage in a circuit by means of a chemical reaction.

Centre of Mass

The point at which the mass of an object can be considered to be concentrated

Charge

See electrostatic charge

Chemical Energy

Energy stored in chemical substances and which can be released in a chemical reaction.

Circuit Breaker

A safety device that automatically switches off a circuit when the current becomes too high.

Commutator

A device used to allow current to flow to and from the coil of a d.c motor or generator.

Compression

A region of a sound wave where the particles are pushed close together

Conduction

The transfer of heat energy or electrical energy through a material without the material itself moving.

Conductor

A substance that transmits heat or allows an electric current to pass through it.

Contaminated

When an object has acquired some unwanted radioactive substance.

Convection

The transfer of heat energy through a material by movement of the material itself.

Converging Lens

A lens that causes rays of light parallel to the axis to converge at the principal focus.

Corkscrew Rule

The rule used to determine the direction of the magnetic field around an electric current.

Coulomb (C)

The SI unit of electric charge: $1C = 1As$

Count Rate

The number of decaying radioactive atoms detected each second (or minute, or hour)

Crest

The highest point of wave.

Critical Angle

The minimum angle of incidence at which total internal reflection occurs.

Current

The rate at which electric charge passes a point in a circuit.

Current – Voltage Characteristic

A graph showing how the current in a component depends on the p.d across it.

Demagnetization

Destroying the magnetization of a piece of material.

Density

The ratio of mass to volume for a substance.

Diffraction

When a wave spreads out as it travels through a gap or past the edge of an object.

Diode

An electrical component that allows electric current to flow in one direction only.

Direct Current (D.C)

Electric current that flows in the same direction all the time.

Dispersion

The separation of different wavelength of light because they are refracted through different angles.

Diverging Lens

A lens that causes rays of light parallel to the axis to diverge from the principal focus.

Doing Work

Transferring energy by means of a force

Drag

The frictional force when an object moves through a fluid (a liquid or a gas)

Dynamo Effect

Electricity is generated when a coil moves near a magnet

Earthed

When the case of an electrical appliance is connected to the earth wire (for safety)

Efficiency

The fraction of energy that is converted into a useful form

Elastic Energy

See strain energy

Electric Field

A region of space in which an electric charge will feel a force

Electrical Energy

Energy transferred by an electric current

Electric Resistance

See resistance

Electromagnet

A coil of wire that, when a current flows in it, becomes a magnet

Electromagnetic Radiation

Energy travelling in the form of waves

Electromagnetic Spectrum

The family of radiations similar to light.

Electron

A negatively charged particle, smaller than an atom

Electron Charge

The electric charge of a single electron; $-1.6 \times 10^{-19} \text{ C}$

Electrostatic Charge

A property of an object that causes it to attract or repel other objects with charge.

E.M.F (Electro-motive force)

The voltage across the terminals of a source of electrical energy (for example, a cell or power supply)

Energy

The capacity to do work.

Equilibrium

When no net force and no net moment act on a body.

Evaporation

When a liquid changes to a gas at a temperature below its boiling point.

Extension

The increase in length of a spring when a load attached.

Fleming's left-hand rule

A rule that gives the relationship between the directions of force, field and current when a current flows across a magnetic field.

Fleming's right-hand rule

A rule that gives the relationship between the directions of force, field and current when a current is induced by moving a conductor relative to a magnetic field.

Focal Length

The distance from the centre of a lens to its principal focus

Focal Point

See principal focus

Force

The action of one body on a second body that causes its velocity to change.

Fossil Fuel

A material, formed from long-dead material, used as a fuel.

Fossil Fuel

A material, formed from long-dead material, used as a fuel.

Frequency

The number of vibrations per second, or number of waves per second passing a point.

Friction

The force that acts when two surface rub over one another.

Fuse

A device used to prevent excessive currents flowing in a circuit.

Gamma Ray (γ-ray)

Electromagnetic radiation emitted by an atomic nucleus during radioactive decay.

Gravitational Potential Energy (g.p.e)

The energy of an object raised up against the force of gravity.

Gravity

The force that exists between any two objects with mass

Half-life

The average time taken for half the atoms in a sample of a radioactive material to decay

Hard

A material that, once magnetized, is difficult to demagnetize.

Hooke's Law

The extension of an object, it proportional to the load producing it, provided that the limit of proportionality is not exceeded.

Image

What we see when we view an object by means of reflected or refracted rays.

Impulse

The product of a force and the time for which it acts (Impulse= Ft)

Incident Ray

A ray of light striking a surface.

Induction

A method of giving an object an electric charge without making contact with another charged object.

Infrared Radiation

Electromagnetic radiation whose wavelength is greater than that of visible light; sometimes known as heat radiation.

Infrasound

Sound waves whose frequency is so low that they cannot be heard.

Insulator

A substance that transmits heat very poorly or does not conduct electricity.

Internal Energy

The energy of an object, the total kinetic and potential energies of its particles.

Interrupt Card

A piece of card that breaks the light beam of a light gate.

Ionization

When a particle (atom or molecule) becomes electrically charged by losing or gaining electrons.

Ionizing Radiation

Radiation, for example from radioactive substances, that causes ionization

Irradiated

When an object has been exposed to radiation isotopes of an element have the same proton number but different nucleon numbers.

Joule (J)

The SI unit of work or energy.

Kinetic Energy (k.e)

The energy of a moving object

Kinetic Model of Matter

A model in which matter consists of molecules in motion.

Lamina

A flat object of uniform thickness

Laser

A device for producing a narrow beam of light of a single colour or wavelength.

Latent Heat

The energy needed to melt or boil a material

Law of Reflection

The law relating the angle of incidence of a light ray to the angle of reflection ($i=r$)

Light-Dependent Resistor (LDR)

A device whose resistance decreases when light shines on it.

Light Energy

Energy emitted in the form of visible radiation.

Light Gate

A device for recording the passage of a moving object when it breaks a light beam.

Limit of Proportionality

The point beyond which the extension of a object is no longer proportional to the load producing it.

Load

A force that causes a spring to extend.

Logic Gate

An electronic component whose output voltage depends on the input voltage (s)

Longitudinal Wave

A wave in which the vibration is forward and back, long the direction in which the wave is travelling.

Magnetic Field

The region of space around a magnet or electric current in which a magnet will feel a force.

Magnetization

Causing a piece of material to be magnetism, a material is magnetized when it produces a magnetic field around itself.

Manometer

Monometer a device used to measure the pressure difference between two points.

Mass

Mass the property of an object that causes it to have a gravitational attraction for other objects and that causes it to resist changes in its motion.

Melting Point

Melting point the temperature at which a solid melts to become a liquid.

Model

Model a way of representing a system in order to understand its functioning usually mathematical.

Moment

Moment the turning effect of a force about a point, given by force x perpendicular distance from pivot to force.

Momentum

Momentum the product of an object's mass and its velocity. (momentum = mv)\

Monochromatic

Monochromatic describes a ray of light (or other electromagnetic radiation) of a single wavelength.

National grid

National grid the system of power lines, pylons and transforms used to carry electricity around the country.

Negative charge

Negative charge one type of electric charge.

Neutral

Neutral having no overall positive or negative electric charge.

Neutron

Neutron an electrically neutral particle found in the atomic nucleus.

Neutron number (N)

Neutron number (N) the number of neutrons in the nucleus of an atom.

Newton (N)

Newton (N) the SI unit of force the force required to give a mass of 1kg an acceleration of 1 m/s^2

Non-renewable

Non-renewable energy resource which once is gone forever

Normal

Normal the line drawn at right angles to a surface at the point where a ray strikes the surface.

Nuclear energy

Nuclear energy stored in the nucleus of an atom

Nuclear fission

Nuclear fission the process by which energy is released by the splitting of a large heavy nucleus into two or more lighter nuclei.

Nuclear fusion

Nuclear fusion the process by which energy is released by the joining together of two small light nuclei to form a new heavier nucleus.

Nucleon

Nucleon a particle found in the atomic nucleus a proton or a neutron.

Nucleon number (A)

Nucleon number (A) the number of protons and neutrons in an atomic nucleus.

Nuclide

Nuclide a species of nucleus having particular values of proton number and nucleon number.

Ohm (Ω)

Ohm (Ω) the SI unit of electrical resistance $1\Omega = 1 \text{ V/A}$

Ohmic resistor

Ohmic resistor any conductor for which the current in it is directly proportional to the p.d across it.

Pascal (Pa)

Pascal (Pa) the SI unit of pressure $1\text{Pa} = 1 \text{ N/m}^2$

P.D (Potential Difference)

Another name for the voltage between two points.

Penetrating Power

How for radiation can penetrate into different materials.

Period

The time for one complete oscillation of a pendulum, one complete vibration or the passage of one complete wave.

Photocell

See solar cell

Pitch

How high or low a note sounds

Positive Charge

One type of electric charge

Potential divider

A part of a circuit consisting of two resistors connected in series.

Power

The rate at which work is done or energy is transferred.

Power Lines

Cables used to carry electricity from power stations to consumers.

Pressure

The force acting per unit area at right angles to a surface.

Principal Focus

The point at which rays of light parallel to the axis converge after passing through a converging lens.

Principle of Conservation of Energy

The total energy of interacting objects is constant provided no net external force acts.

Principle of Conservation of Momentum

The total momentum of interacting objects is constant provided no net external force acts.

Proton

A positively charged particle found in the atomic nucleus.

Proton Charge

The electric charge of a single proton; $+ 1.6 \times 10^{-19} \text{ C}$

Proton Number (Z)

The number of protons in an atomic nucleus

Radiation

Energy spreading out from a source carried by particles or waves.

Radioactive Decay

The decay of a radioactive substance when its atomic nuclei emit radiation.

Radioactive Substance

A substance that decays by emitting radiation from its atomic nuclei.

Radioactive Tracing

A technique that uses a radioactive substance to trace the flow of liquid or gas, or to find the position of cancerous tissue in the body.

Radiocarbon Dating

A technique that uses the known rate of decay of radioactive carbon 14 to find the approximate age of an object made from dead organic material.

Radioisotope

A radioactive isotope of an element

Random Process

A process that happens at a random rate rather than a steady rate; in radioactive decay, it is impossible to predict rate; in radioactive decay, it is impossible to predict which atom will be the next to decay, or when a given atom will decay.

Rarefaction

A region of a sound wave where the particles are further apart.

Ray diagram

A diagram showing the paths of typical rays of light.

Real Image

An image that can be formed on screen.

Rectifier

An electric circuit in which one or more diodes are used to convert alternating current to direct current.

Reflected Ray

A ray of light that has been reflected after it strikes a surface without passing through it.

Refracted Ray

A ray of light that has changed direction on passing from one material to another.

Refraction

The bending of a ray of light on passing from one material to another.

Refractive Index

The property of a material that determines the extent to which it causes rays of light to be refracted.

Relay

An electromagnetically operated switch.

Renewable

Energy resource which, when used, will be replenished naturally.

Residual-current Device (RCD)

A device used to protect the user in case of an electrical fault.

Resistance

A measure of the difficulty of making an electric current flow through a device or a component in a circuit.

Resistor

A component in an electric circuit whose resistance reduce the current flowing.

Resultant Force

The single force that has the same effect on a body as two or more forces.

Ripple

A small, uniform wave on the surface of water.

Scalar Quantity

A quantity that has only magnitude.

Slip Rings

A device used to allow current to flow to and from the coil of an a.c. motor or generator.

Snell's Law

The law that relates the angles of incidence and refraction; refractive index = $\frac{\sin i}{\sin r}$

Soft

Describe a material that, once magnetized, can of sunlight directly to electricity, by producing a voltage when light falls on it.

Solar Cell

An electrical device that transfers the energy of sunlight directly to electricity, by producing a voltage when light falls on it.

Solar Panel

A device that absorbs sunlight to heat water.

Solenoid

A coil of wire that becomes magnetized when a current flows through it.

Sound Energy

Energy being transferred in the form of sound waves.

Sound Wave

A wave that carries sound from place to place.

Specific Heat Capacity (s.h.c)

A measure of how much thermal (heat) energy a material can hold.

Specific Latent Heat

The energy required to melt or boil 1 kg of a substance.

Spectrum

Waves, or colours of light, separated out in order according to their wavelength.

Speed

The distance travelled by an object in unit time.

Speed of Light

The speed at which light travels (usually in a vacuum: 3.0×10^8 m/s)

Sprint Constant

The ratio of force to extension for a spring which obeys Hooke's Law

Static Electricity

Electric charge held by a charged insulator.

Strain Energy

Energy of an object due to its having been stretched or compressed.

Temperature

A measure of how hot or cold something is

Terminal Velocity

The greatest speed reached by an object when moving through a fluid.

Thermal (Heat) Energy

Energy being transferred from a hotter place to a colder place because of the temperature difference between them.

Thermal Equilibrium

Describe the state of two objects (or an object and its surroundings) that are at the same temperature so that there is no heat flow between them.

Thermal Expansion

The expansion of a material when its temperature rises.

Thermionic Emission

The process by which cathode rays (electrons) are released from the heated cathode of a cathode-ray tube.

Thermistor

A resistor whose resistance changes a lot over a small temperature range.

Thermocouple

An electrical device made of two different materials, used as an electrical thermometer.

Total Internal Reflection (TIR)

When a ray of light strikes the inner surface of a solid material and 100% of the light reflects back inside it.

Transducer

Any device that converts energy from one form to another.

Transformer

A device used to change the voltage of an a.c. electricity supply.

Transverse Wave

A wave in which the vibration is at right angles to the direction in which the wave is travelling.

Trip Switch

A device used to protect an electric circuit in case of an electrical fault.

Trough

The lowest point on a wave.

Truth Table

A way of summarizing the operation of a combination of logic gates.

Turbine

A device that is caused to turn by moving air, steam or water, often used to generate electricity.

Ultrasound

Sound waves whose frequency is so high that they cannot be heard.

Ultraviolet Radiation

Electromagnetic radiation whose frequency is higher than that of visible light.

Upper Limit of Hearing

The highest frequency of sound that a person can just hear.

Variable Resistor

A resistor whose resistance can be changed, for example by turning a knob.

Vector Quantity

A quantity that has both magnitude and direction.

Vector Triangle

A method for finding the vector sum of two vector quantities.

Velocity

The speed of an object in a stated direction.

Virtual Image

An image that cannot be formed on a screen, formed when rays of light appear to be spreading out from a point.

Volt (V)

The SI unit of voltage (p.d. or e.m.f); one volt is equal to one joule per coulomb ($1 \text{ V} = 1 \text{ J/C}$)

Voltage

The 'push' of a battery or power supply in a circuit.

Voltmeter

A meter for measuring the p.d (voltage) between two points.

Watt (W)

The SI unit of power; the power when 1 J of work is done in 1 s.

Wave Speed

The speed at which a wave travels.

Wave Front

A line joining adjacent points on a wave that are all in step with each other.

Wave Length

The distance between adjacent crests (or troughs) of a wave.

Weight

The downward force of gravity that acts on an object because of its mass.

Work Done

The amount of energy transferred when one body exerts a force on another; the energy transferred by a force when it moves.

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