

OCR Unit 2 G482 Definitions

electric current - the net flow of charged particles per unit time through a point. unit; amperes.
vector quantity

conventional current - a model used to describe the movement of charged particles in a circuit.
positive to negative

electron flow - the movement of electrons (charged particles) around a circuit. negative to positive

electric charge - measured in coulombs, 1 coulomb being the total charge supplied by a current of 1 ampere in a time of 1 second

ammeter - instrument that measures electrical current

elementary charge - the charge on one electron is 1.6×10^{-19}

Kirchoff I - the sum of the current flowing into a junction/point is equal to the sum of the current flowing out of the junction/point. due to conservation of charge

mean drift velocity - the average speed of charged particles along the length of a conductor

conductor - a material with a high number density of conduction electrons and therefore a low resistance

semiconductor - a material with low number density of conduction electrons and therefore a high resistance

insulator - a material with a number density of conduction electrons nearing 0 and therefore a very high resistance

electromotive force (e.m.f.) - energy transferred per unit charge when a type of energy is being converted to electrical energy. work done on every unit of charge. vector quantity

potential difference (p.d.) - energy transferred per unit charge when electrical energy is converted into another form of energy. work done by every unit of charge

voltmeter - instrument used to measure electromotive force and potential difference across components

power - work done per unit time

resistance - a property of a component that regulates the electrical current flowing through it. resistance is the potential difference across a component per unit current

Ohm's law - states that at a constant temperature, the current that flows through a component is directly proportional to the potential difference across it

light-emitting-diodes (LEDs) - a component that only allows electric current flow through it in one direction and that emits light when a p.d. is applied across it

resistivity - described property of the material rather than of the electrical component

dynamo - device that converts kinetic energy to electrical energy

fuse - an electrical component designed to heat up, melt and break the circuit (hence stop the current) when a specified amount of electrical current passes through it. safety device

kWh - unit of energy used by electrical companies when charging for electricity

series circuit - a circuit in which the components are connected end-to-end and therefore there is only one path for current to flow

parallel circuit - a circuit in which there is more than one "loop" connected to the power supply, therefore more than one path for current to flow

Kirchoff II - the sum of the e.m.f.'s around a loop is equal to the sum of the p.d.'s around the same loop. due to conservation of charge

internal resistance - resistance of an e.m.f. source

terminal p.d. - this is the total p.d. across the "load" (external) resistance

potential divider circuit - a type of circuit containing two components designed to divide up the p.d. in proportion to the resistances of the components

progressive waves - move through material (excluding EM), transferring energy from one position to another

mechanical waves - waves that need a medium to travel through

longitudinal waves - motion of the oscillation of particles is parallel to the direction of propagation

transverse waves - motion of oscillation of particles is perpendicular to the direction of propagation

displacement of wave - the distance from a given point on the wave to its equilibrium/rest point

amplitude of waves - maximum displacement from equilibrium/rest point, measured in metres

wavelength λ - the smallest distance between one point on a wave and the identical point on the next wave (i.e. peak to peak) measured in metres

period T - time taken to complete one full oscillation (from peak to peak), measured in seconds

frequency f - the number of oscillation passing a point per second, measured in Hz

$$f = 1/T$$

phase difference - the proportion of a cycle by which two waves are "out of sync", measured in radians. phase difference of two points on a wave - amount by which one oscillation leads/lags behind another

wave speed - speed with which energy is transmitted by a wave. $v = f\lambda$ or $c = f\lambda$

intensity - rate of energy transfer per unit area at right angles to wave velocity

reflection - when waves rebound from a barrier, changing direction but remaining in the same medium

refraction - when waves change direction when they travel from one medium to another due to difference in wave speed in each medium

diffraction - when a wave spreads out after passing around an obstacle or through a gap

electromagnetic waves - a self-propagating transverse wave that does not require a medium to travel through

polarity - a wave property that allows us to distinguish between transverse and longitudinal waves

polarisation - the process of turning an un-polarised wave into a plane polarised wave

plane polarised - a transverse wave that only oscillates in one direction

Malus' Law - physical law describing the change in intensity of a wave passing through a Polaroid analyser

principle of superposition - ability of a waves to pass through each other and temporarily occupy the same space and combine then carry on unaffected

interference - the addition (superposition) of two or more coherent waves, resulting in a new wave formed

coherence - two waves with a constant phase relationship over a significant period of time. coherent sources emit waves that have a constant phase relationship

path difference - the proportion of a wavelength by which two waves are "out of sync"

constructive interference - when two waves superpose and reinforce to give an increased amplitude

destructive interference - two waves that superimpose and cancel out to give a reduced amplitude

monochromatic - light of one wavelength or frequency

stationary waves - a wave pattern produced when two progressive waves of the same frequency travelling in opposite directions superpose, and the energy is stored rather than transferred from one place to another

antinode - point of maximum amplitude along a stationary wave caused by constructive interference

node - a point that always has 0 amplitude along a stationary wave caused by destructive interference

fundamental mode of vibration - the simplest stationary wave that can be set up where the length of the string is half the wavelength

fundamental frequency - lowest frequency in harmonics series where a stationary wave forms

harmonics - whole number multiples of the fundamental frequency of a stationary wave

photon - a quantum of energy of electromagnetic radiation

electronVolt - the energy change of an electron when it moves through a potential difference of 1 volt

photocell - a component that reduced its resistance when light shines on it due to the photoelectric emissions of electrons

work function ϕ - minimum energy required by a single electron to escape the metal surface

threshold frequency - the minimum frequency required to release electrons from the surface of a metal

de broglie equation - an equation expressing the wavelength of a particle as a ratio of planck's constant and the particles momentum

spectrum - collection of waves with a range of frequencies

emission spectra - a pattern of colours of light, each colour having a specific wavelength

absorption spectra - a spectrum of light with dark lines produced when light passes through a cool gas and the gas absorbs certain frequencies depending on the elements in the gas