

Physics AS - Unit 2 - Particles, Quantum Phenomena and Electricity - Definitions

Electricity

- **Electromotive Force (Emf)** - the amount of electrical energy produced by a battery/source per unit of charge
- **Power** - rate of transferee of electrical energy to a component per second
- **Resistance** - potential difference divided by the current, it the electrical energy used when a current of 1 amp moves through a component
- **Electrical Current** - defined as the number of charged particles passing a point per second
- **Potential Difference/Voltage** - the amount of electrical energy converted or transferred per unit of charge between 2 points
- **Ohm's Law** - the current passing through a conductor is proportional to the voltage as long as the physical conditions do not change
- **Resistivity** - defined as the resistance of a 1m^2 cross section conductor with a length of 1m
- **Critical/Transition Temperature** - The temperature that below which a superconductor has no resistance and very large currents can pass through with very small voltage/very small energy losses
- **Internal resistance** - an electrical source or cell's opposition to the flow of charge through it, defined as the loss of pd per unit current when a current passes through the source/cell

Particle Physics

- **Isotopes** - Nuclides with the same number of protons but different number of protons or nucleons
- **Pair Production** - when a particle and its corresponding anti-particle are produced from a photon with energy greater than the total rest energy of the 2 particles
- **Annihilation** - When a particle and its corresponding anti-particle collide they annihilate converted their kinetic energy and rest energies into 2 high energy photons (with energy $E=hf$)