

Definitions and Concepts for AQA Physics GCSE

Topic 7: Magnetism and Electromagnetism

*Definitions in **bold** are for higher tier only*

Definitions marked by '' are for separate sciences only*

Alternator: A device that makes use of the generator effect to generate alternating current.

Attraction: Opposite poles will experience a force of attraction, meaning they will experience a force towards each other. The force between a magnet and magnetic material is always one of attraction.

Current-Carrying Wires: When current flows through a wire, a magnetic field is generated around it. The strength of the field is dependent on the magnitude of the current and the distance from the wire.

Dynamo: A device that makes use of the generator effect to generate direct current.

Electric Motor: A current-carrying coil of wire in a magnetic field. The two sides of the coil that are perpendicular to the magnetic field experience forces in opposite directions, causing rotation.

Electromagnet: A solenoid with an iron core.

Fleming's Left-Hand Rule: A rule used to determine the orientation of the force (thumb), current (second finger) and magnetic field (first finger) when a current-carrying wire is placed in a magnetic field (motor effect).

Generator Effect: When there is relative motion between an electrical conductor and a magnetic field, a potential difference will be induced across the ends of the conductor. A current will flow if this conductor is part of a complete circuit.

Induced Magnet: A material that becomes a magnet when it is placed in an existing magnetic field, but loses its magnetism quickly once it is removed. Induced magnetism always produces attractive forces.



Magnetic Compass: A device containing a small bar magnet that points in the direction of the Earth's magnetic field.

Magnetic Field Lines: Lines representing the strength and direction of a magnetic field. The field line direction at any point is in the direction that a force would act on another north pole if placed at that point.

Magnetic Field: The region around a magnet in which another magnet or magnetic material will experience a force.

Magnetic Materials: Iron, steel, cobalt and nickel.

Magnetic Poles: The regions of a magnet where the magnetic forces are at their strongest.

Microphone: A device that uses the generator effect to convert the pressure variations of sound waves into variations in the electrical current of a circuit.

Motor Effect: When a current-carrying wire is placed in a magnetic field, a force will be experienced between the wire and the magnet responsible for the field.

Permanent Magnet: A magnet that produces its own magnetic field.

Repulsion: Like-poles will experience a force of repulsion, meaning they will experience forces in opposite directions.

Solenoid: A wire wrapped into the shape of a coil, that has a strong and uniform magnetic field inside of it. The solenoid's magnetic field strength can be increased by adding an iron core.

Step-Down Transformer: A transformer that has a smaller potential difference in the secondary coil than in the primary core.

Step-Up Transformer: A transformer that has a larger potential difference in the secondary coil than in the primary core.

Tesla: The unit of magnetic flux density.

Transformer: An iron core with a primary and secondary coil of wire wound around opposite ends.

