

Electro-Magnetism

Chapter 10: Electro-Magnetism · Topic 1

Key Concept

A current-carrying conductor produces a magnetic field around it, with the field's direction found using the right-hand thumb rule.

A solenoid (coil of wire) carrying current behaves like a bar magnet, with its strength increased by adding an iron core, forming an electromagnet.

The motor effect states that a current-carrying conductor in a magnetic field experiences a force, the basic principle behind electric motors.

Electromagnetic induction is the production of an EMF (voltage) in a conductor due to a changing magnetic field, the principle behind generators.

Quick Revision Notes

- Current-carrying conductor produces magnetic field.
- Direction found via right-hand thumb rule.
- A solenoid behaves like a bar magnet.
- Iron core increases solenoid strength (electromagnet).
- Motor effect: force on current in magnetic field.
- This is the basic electric motor principle.
- Electromagnetic induction: changing field produces EMF.
- This is the generator principle.

Practice Questions

- 1 Draw the magnetic field around a current-carrying wire.
- 2 Explain how a solenoid becomes an electromagnet.
- 3 Discuss the motor effect with an example.
- 4 Discuss electromagnetic induction and generators.
- 5 Research the difference between a motor and generator.
- 6 Explain electromagnetism concepts in your own words.