

Magnetic Effect of Electric Current

Chapter 4: Electricity: Magnetic and Heating Effects · Topic 1

Key Concept

An electromagnet is created by wrapping an insulated wire coil around an iron core; when current flows through the coil, the iron core becomes strongly magnetised, but loses its magnetism when the current stops — making electromagnets 'switchable' magnets, unlike permanent magnets. Electromagnets are widely used in devices like electric bells, cranes for lifting heavy scrap metal, and electric motors, since their strength can be controlled by adjusting the current or the number of coil turns.

Quick Revision Notes

- A current-carrying wire produces a magnetic field around it (Oersted's discovery, 1820).
- An electromagnet is made by wrapping wire around an iron core; current makes it magnetic.
- Electromagnets lose magnetism when current stops, unlike permanent magnets.
- Uses: electric bells, cranes, electric motors.

Practice Questions

- 1 Describe how an electromagnet is made using a wire and a battery.
- 2 Name two devices that use electromagnets.
- 3 Explain the key difference between an electromagnet and a permanent magnet.