

6.1 Magnetism and the motor effect

Name: _____ Class: _____ Date: _____

Total: 16 marks

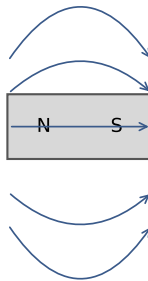
Objective

Cover magnetism and electromagnetism (6.2–6.14): poles and materials, field lines and uniform fields, the field around a current, (P) electromagnets and solenoid patterns, the motor effect, the left-hand rule, motors and loudspeakers. Original IGCSE-level practice.

1 Key knowledge and worked examples

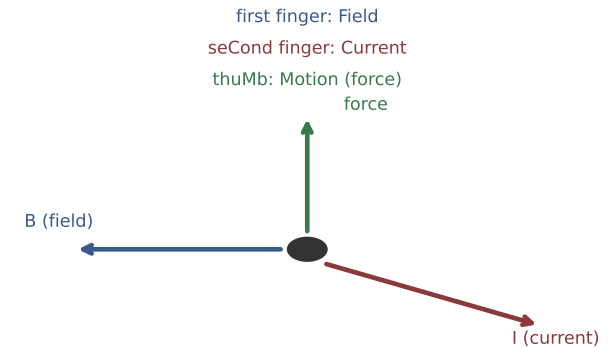
■ Fields first

field lines point from N to S outside the magnet



Hard materials keep magnetism (permanent); soft materials (iron) magnetise and lose it easily. Current in a wire makes circular field lines around it; a solenoid's field is like a bar magnet's.

■ The motor effect and its rule



hold the three mutually at right angles

Force grows with field strength and current; it reverses when either reverses; no force when the wire is parallel to the field.

2 Practice

2.1 State the rule for attraction and repulsion of poles. [1]

2.2 Name one magnetically hard and one magnetically soft material. [2]

2.3 In which direction do magnetic field lines point outside a magnet? [1]

2.4 Describe how two bar magnets can produce a uniform field. [1]

2.5 State the left-hand rule. [3]

3 Exam-style questions

3.1 Explain how an electric motor keeps rotating, naming the key component. [3]

3.2 A wire carrying current upwards sits in a field pointing into the page. Use the left-hand rule to state the force's direction on the wire. [2]

3.3 (P) Describe the construction of an electromagnet and one way to make it stronger without changing the core. [3]
