

Electromagnetic Effects

Question Paper

Course	CIE IGCSE Physics
Section	4. Electricity & Magnetism
Topic	Electromagnetic Effects
Difficulty	Easy

Time Allowed 50

Score /35

Percentage /100

Question 1a

Identify which of the following metals can be permanently magnetised. Place a tick (✓) in the box next to any correct metal.

- ☐ aluminium
- ☐ copper
- ☐ steel
- ☐ tungsten

[1 mark]

Question 1b

Two metal rods are thought to be permanent magnets. Describe the test you would carry out to confirm that both rods are permanent magnets.

[2 marks]

Question 1c

- (i) Describe how to make an electromagnet. You may draw a labelled diagram to help your answer.
- (ii) Suggest **two** factors that affect the strength of the magnetic field of an electromagnet.

[3]

[2]

[5 marks]

Question 2a

Fig. 11.1 shows a relay.

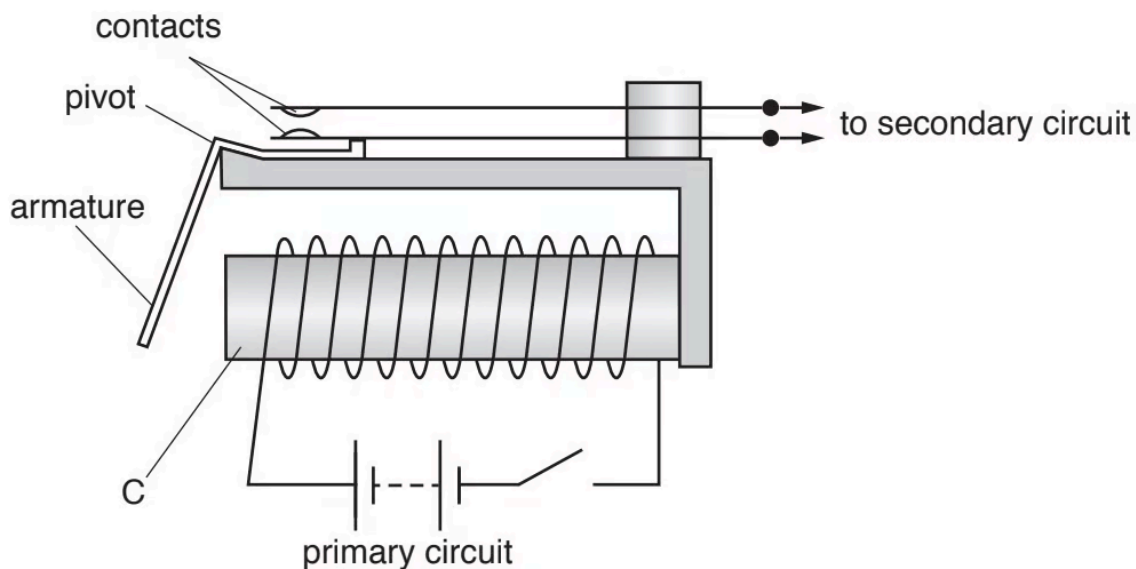


Fig. 11.1

The statements describe the action of a relay. They are not in the correct order.

- P Current in the coil creates an electromagnet.
- Q Secondary circuit is completed.
- R Armature pivots, closing the contacts.
- S Part C attracts the armature.
- T The switch in the primary circuit is closed.

Place the statements in the correct order. One has been done for you.

		S		
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[3 marks]

Question 2b

Fig. 11.1 includes the part labelled C, which is made from a metal.

State the name of the metal and explain why this metal is used in the electromagnet.

[2 marks]

Question 3a

Fig. 11.1 shows a diagram of an electrical device. The diagram is not complete. The coil rotates in a magnetic field when connected to a d.c. power supply.

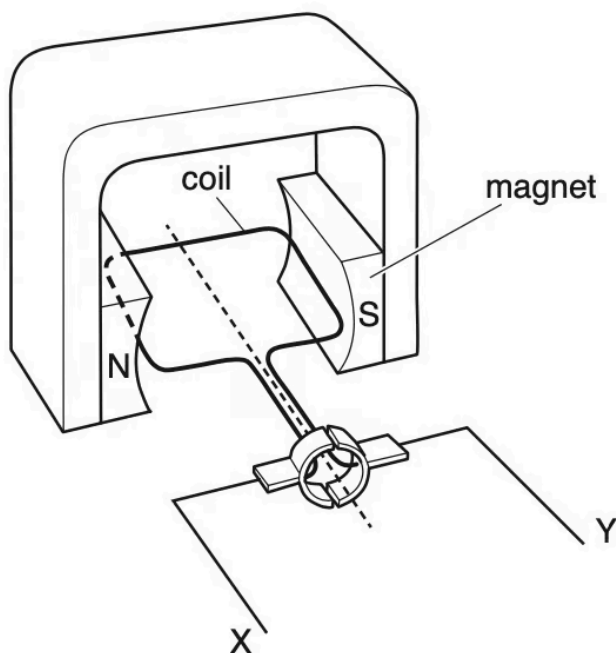


Fig. 11.1

- (i) Explain the meaning of the term d.c.

[1]

- (ii) Complete the diagram in Fig. 11.1 by drawing the symbols for two cells in series **and** a switch to make a circuit.

[2]

[3 marks]

Question 3b

- (i) State the name of the electrical device shown in Fig. 11.1.

[1]

- (ii) State **two** changes to the electrical device that will make the coil in the device rotate faster.

[2]

[3 marks]

Question 4a

Fig. 11.1 represents a transformer.

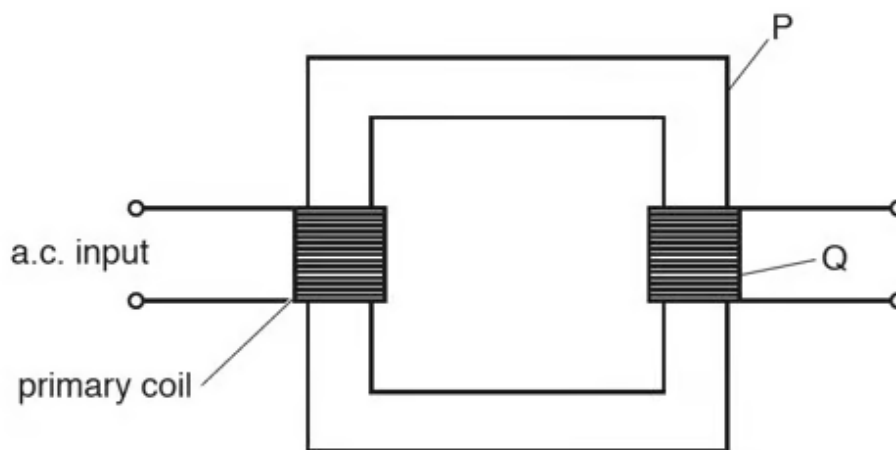


Fig. 11.1

- (i) State the name of the part of the transformer labelled Q in Fig. 11.1.

[1]

- (ii) In Fig. 11.1, part P is made from a metal.

1. State the metal used to make part P.

2. State the term given to part P.

[2]

- (iii) There is an alternating current (a.c.) in the primary coil.

Describe what this current produces in part P.

[2]

- (iv) Complete the sentence using terms from the box.

more	fewer	step-up	step-down
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When there are turns in the primary coil than in Q, the device is called a transformer.

[1]

[6 marks]

Question 4b

The high-voltage transmission of electricity uses transformers.

Describe two advantages of transmitting electricity at high voltages rather than at low voltages.

[2 marks]

Question 5a

Fig. 11.1 shows a coil (solenoid) wrapped around a plastic tube. There is a current in the coil.

The arrows show the direction of the current in the coil.

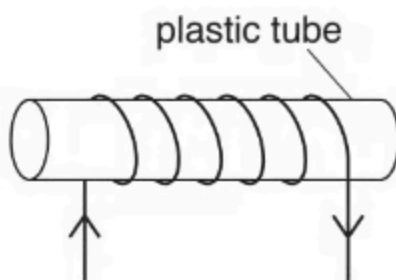


Fig. 11.1

On Fig. 11.1, draw the pattern of the magnetic field lines around the coil.

Add arrows to show the direction of the magnetic field.

[3 marks]

Question 5b

A long soft iron bar is placed inside the plastic tube. There is a current in the coil. This forms a device. State the name of the device.

[1 mark]

Question 5c

Fig. 11.2 shows a relay operated by switch S.

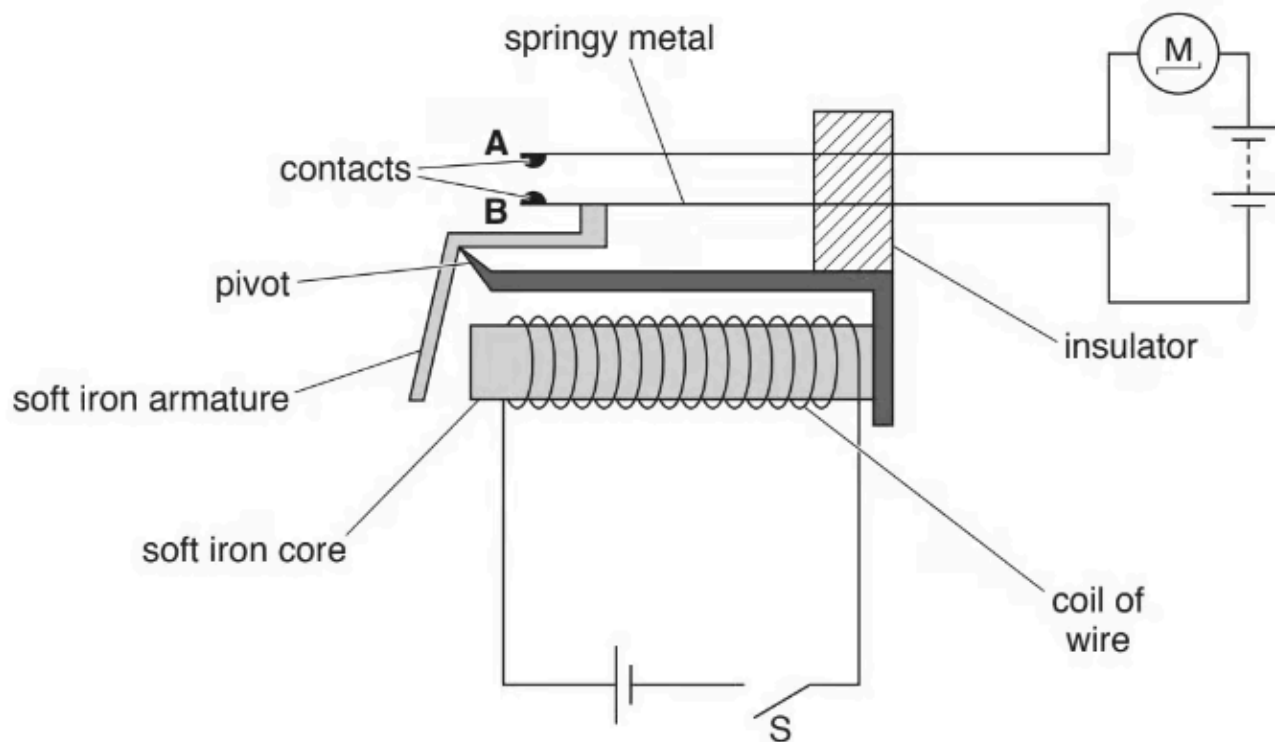


Fig. 11.2

Using Fig. 11.2, describe how closing the switch, S, causes the electric motor to operate.

[4 marks]



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