

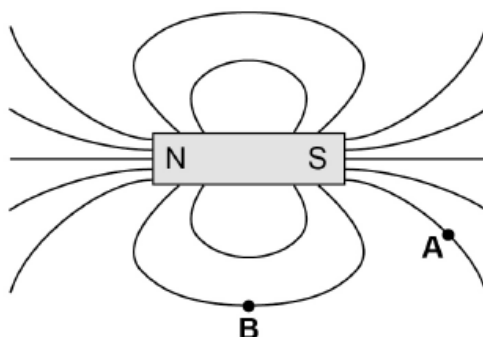
Magnetism and electromagnetism – GCSE Physics Paper 2

1. No.7(7.1_7.4)

07

Figure 16 shows the magnetic field pattern around a bar magnet.

Figure 16



07.1

Draw an arrow at point **A** and point **B** to show the direction of the magnetic field at each point.

[1 mark]

07.2

A bar magnet produces its own magnetic field.

Complete the sentence.

Choose the answer from the box.

[1 mark]

an electromagnet

an induced magnet

a permanent magnet

A bar magnet is an example of _____.

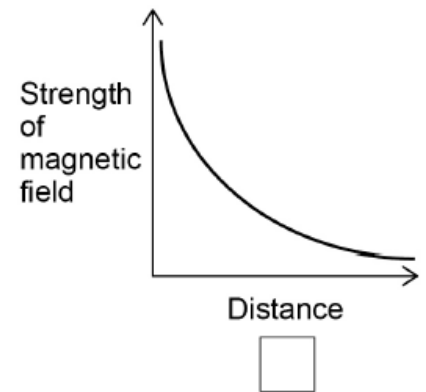
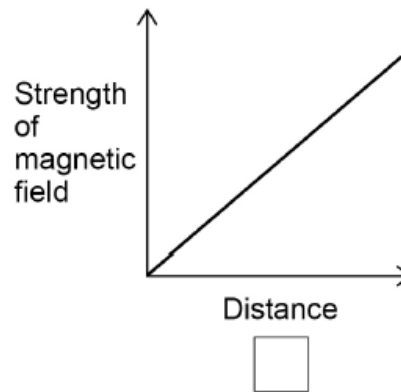
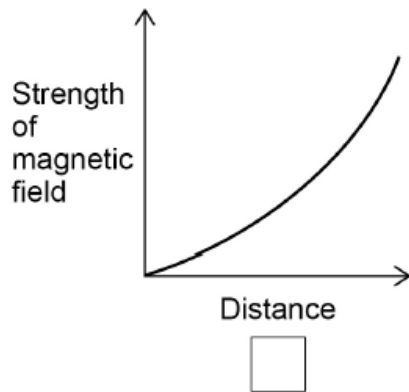
07.3

Which graph shows how the strength of the magnetic field varies with distance from the bar magnet?

Give a reason for your answer.

[2 marks]

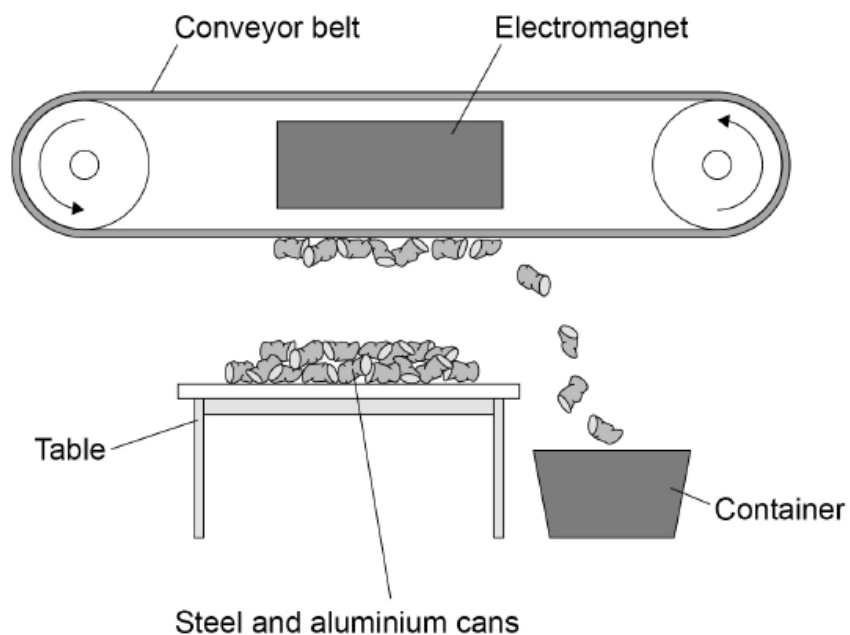
Tick (✓) **one** box.



Reason _____

Figure 17 shows an electromagnet being used to separate aluminium cans from steel cans.

Figure 17



0 7 . 4

Explain how the electromagnet and conveyor belt are used to separate the steel cans from the aluminium cans.

[2 marks]

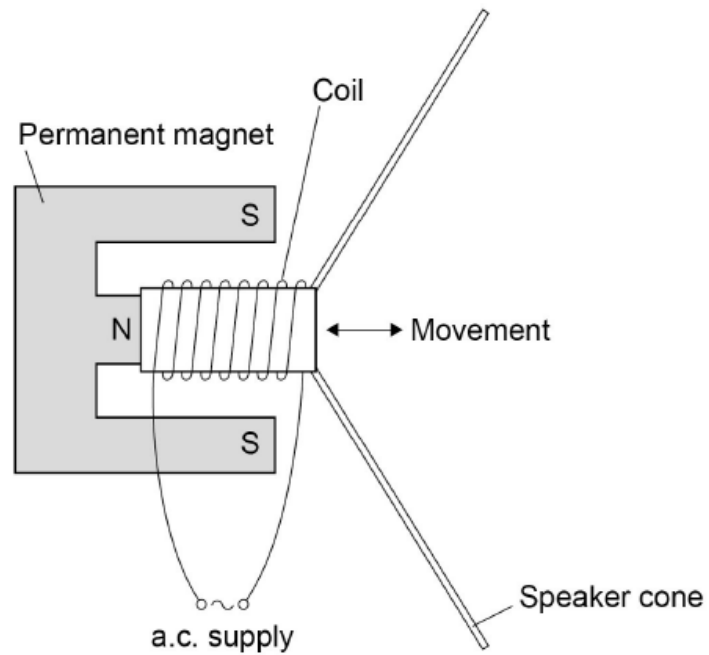
2. No.8

0 8

A student made a moving-coil loudspeaker.

Figure 15 shows a diagram of the loudspeaker.

Figure 15



0 8 . 1

What is the name of the effect used by the moving-coil loudspeaker to produce sound waves?

[1 mark]

08.2

Explain how a moving-coil loudspeaker produces a sound wave.

[4 marks]

- 0 8 . 3 A student investigated how the loudness of sound from the loudspeaker depends on:
- the number of turns on the coil
 - the frequency of the supply.

Table 2 shows the results.

Table 2

Number of turns	Frequency of supply in Hz	Loudness of sound in arbitrary units
100	200	32
200	400	47
300	600	63

Explain why the results **cannot** be used to make a valid conclusion.

[2 marks]

3. No.9

0 9

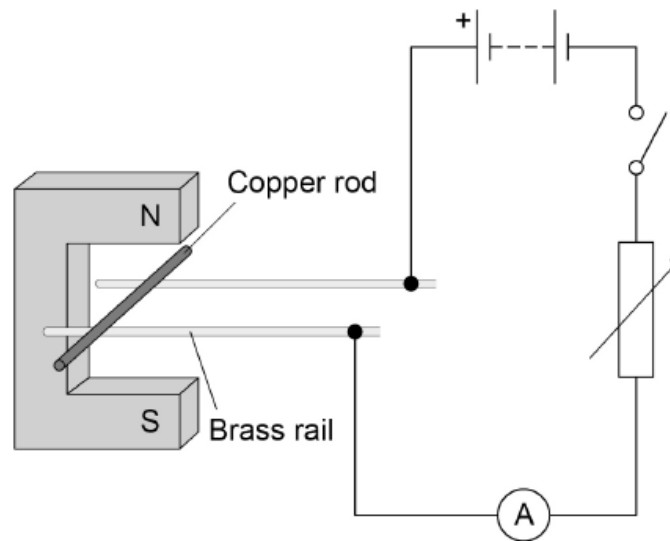
A teacher demonstrated how a magnetic field can cause a copper rod to accelerate.

The teacher placed the copper rod on two brass rails in a magnetic field.

The copper rod was able to move.

Figure 16 shows the equipment used.

Figure 16



0 9 . 1 The teacher closes the switch and the copper rod accelerates.

Explain how Fleming's left hand rule can be used to predict the direction in which the copper rod will move.

[5 marks]

0 9 . 2 Suggest **two** changes to the equipment that would increase the force on the copper rod.

[2 marks]

1

2

09.3

The teacher closed the switch and the copper rod accelerated uniformly from rest for 0.15 s.

The current in the copper rod was 1.7 A.

mass of copper rod = 4.0 g

length of copper rod in the magnetic field = 0.050 m

magnetic flux density = 0.30 T

Calculate the maximum possible velocity of the copper rod when it left the magnetic field.

[6 marks]

Maximum velocity = _____ m/s