

Magnetism and electromagnetism – GCSE Physics Paper 21. **No.2****0 2**

Some metals are magnetic and others are non-magnetic.

0 2**. 1**

Which of the following metals is magnetic?

[1 mark]Tick (✓) **one** box.

Aluminium

☐

Cobalt

☐

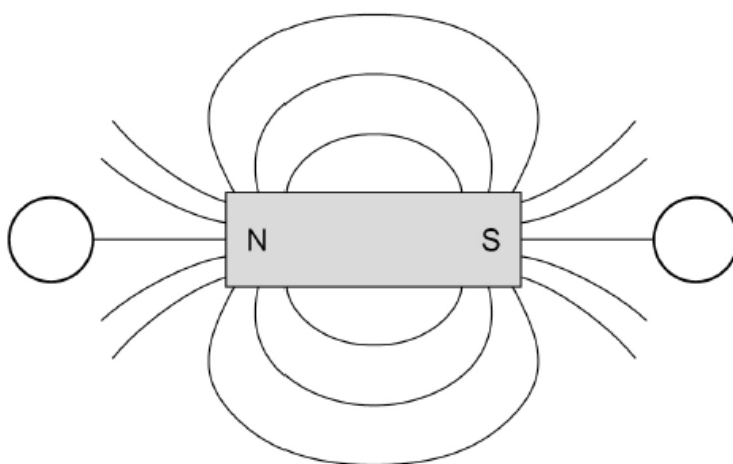
Copper

☐

Zinc

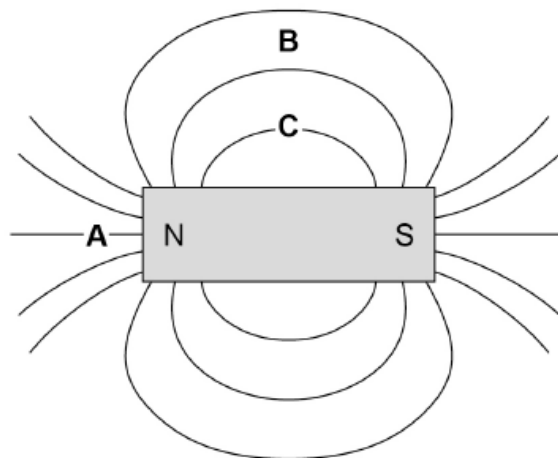
☐**0 2****. 2****Figure 1** shows magnetic field lines around a bar magnet.

The circles represent plotting compasses.

Figure 1Draw **one** arrow in each circle on **Figure 1** to show the direction of the magnetic field at each place.**[2 marks]**

0 2 . 3 Figure 2 shows magnetic field lines around a bar magnet.

Figure 2



Which letter shows where the magnetic field is strongest?

[1 mark]

Tick (✓) one box.

A

☐

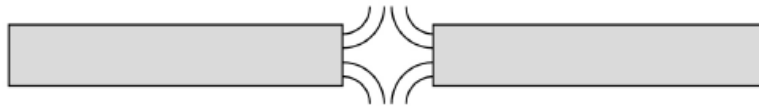
B

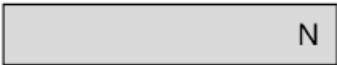
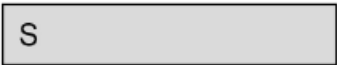
☐

C

☐

0 2 . 4

Figure 3 shows the magnetic field lines between two bar magnets.**Figure 3**Which diagram shows how the magnets are arranged in **Figure 3**?**[1 mark]**Tick (✓) **one** box.

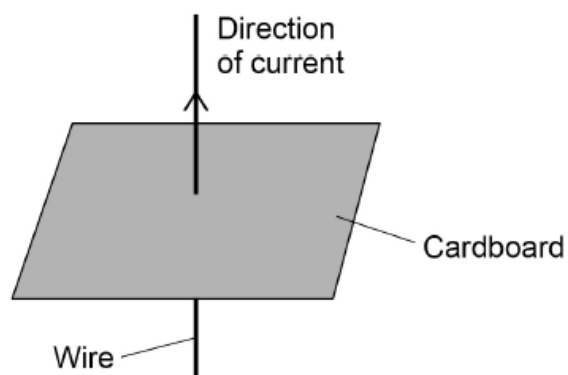
		☐
		☐
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A teacher demonstrates how a current in a wire creates a magnetic field around the wire.

Figure 4 shows the wire passing through a piece of cardboard.

The current can be switched on and off.

Figure 4



0 2 . 5

Describe how the teacher can use a plotting compass to demonstrate the magnetic effect of the current in the wire.

[2 marks]

0 2 . 6

The teacher decreases the current in the wire.

How does the strength of the magnetic field around the wire change?

[1 mark]

Tick (✓) **one** box.

Decreases

☐

Stays the same

☐

Increases

☐

0 2 . 7

The teacher reverses the direction of the current in the wire.

What happens to the magnetic field around the wire?

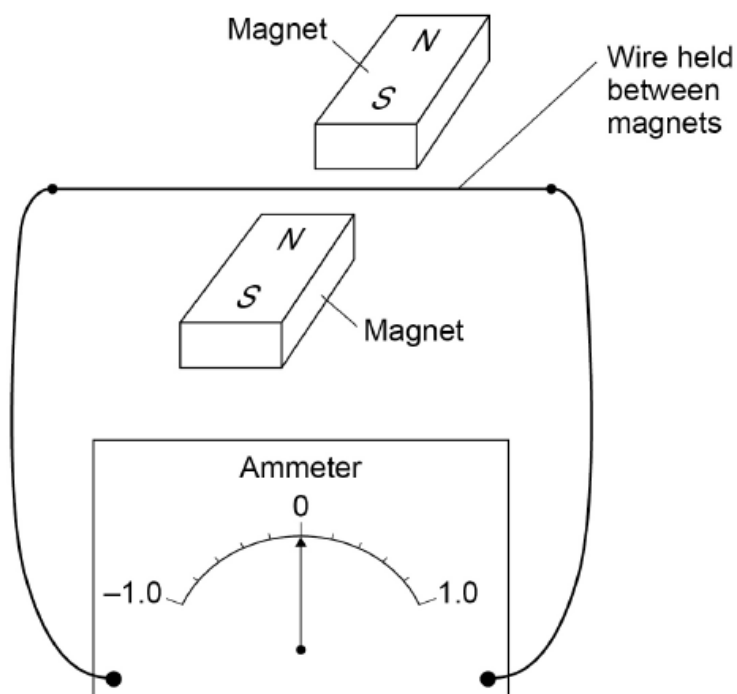
[1 mark]

2. No.8

0 8

Figure 13 shows some apparatus used by a teacher in a demonstration.

Figure 13



The teacher moved the wire upwards between the magnets.

The needle on the ammeter deflected to a value of +0.4 mA and then returned to zero.

0 8 . 1

What effect did this demonstrate?

[1 mark]

08.2

Explain why a current was detected when the wire in **Figure 13** was moved upwards.
[3 marks]

08.3

The teacher reversed the direction of the magnetic field.

The teacher replaced the wire in its original position.

The teacher moved the wire upwards in the same way as before.

What was the deflection of the needle on the ammeter?

[1 mark]

Tick (✓) **one** box.

The needle will deflect to -0.4 mA.

☐

The needle will not move.

☐

The needle will deflect to $+0.4$ mA.

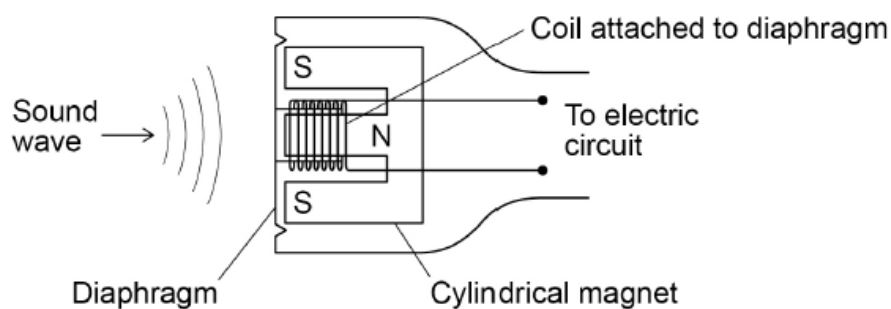
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08.4

Figure 14 shows a sound wave incident on the diaphragm of a moving-coil microphone.

The inside of the microphone includes a small coil of wire and a magnet.

Figure 14



Explain why the sound waves have an effect on the electric circuit.

[3 marks]
