AQA - Magnetism and electromagnetism – GCSE Combined Science Physics

1. June/2020/Paper_2F/No.6

0 6 **Figure 9** shows five different metal samples.

Figure 9

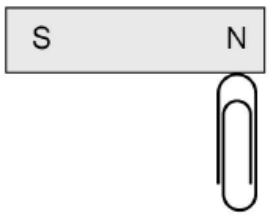
0 6 . 1 A student placed a magnet close to each metal sample.

Describe what happened.

[2 marks]

Figure 10 shows a paper clip being attracted to a permanent magnet.

Figure 10



0 6 . 2 The paper clip in **Figure 10** is not a permanent magnet.

Explain what would happen if the paper clip was removed and brought close to the south pole of the permanent magnet.

[2 marks]

0 6 . 3 Write down the equation that links gravitational field strength (g), mass (m) and weight (W).

[1 mark]

_____

0 6 . 4 The student added more paperclips to one end of the magnet.

The maximum number of paperclips the magnet could hold was 20

Each paper clip had a mass of 1.0 g

gravitational field strength = 9.8 N/kg

Calculate the maximum force the magnet can exert.

[3 marks]

_____

_____

_____

_____

_____

_____

Force = _____ N

2. June/2020/Paper_2H/No.1

0 1 **Figure 1** shows five different metal samples.

Figure 1

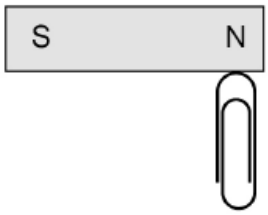
0 1 . 1 A student placed a magnet close to each metal sample.

Describe what happened.

[2 marks]

Figure 2 shows a paper clip being attracted to a permanent magnet.

Figure 2



0 1 . 2 The paper clip in **Figure 2** is not a permanent magnet.

Explain what would happen if the paper clip was removed and brought close to the south pole of the permanent magnet.

[2 marks]

0 1 . 3 Write down the equation that links gravitational field strength (g), mass (m) and weight (W).

[1 mark]

_____

0 1 . 4 The student added more paperclips to one end of the magnet.

The maximum number of paperclips the magnet could hold was 20

Each paper clip had a mass of 1.0 g

gravitational field strength = 9.8 N/kg

Calculate the maximum force the magnet can exert.

[3 marks]

_____

_____

_____

_____

_____

_____

Force = _____ N

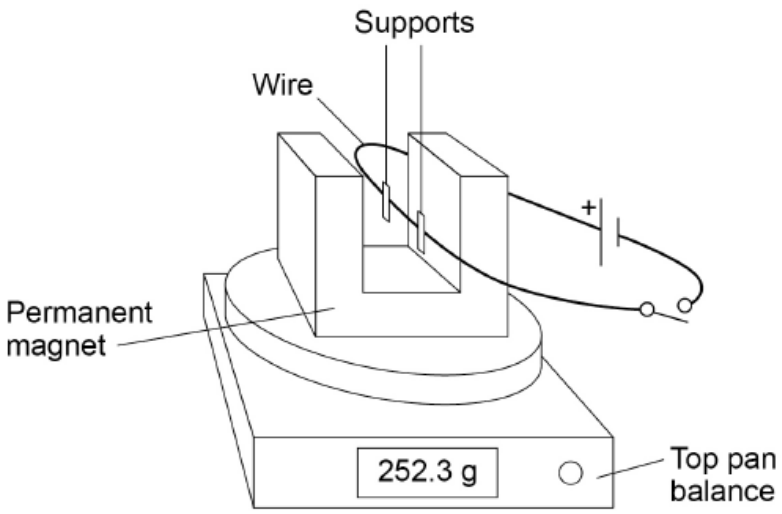
3. June/2020/Paper_2H/No.7

0 7 A student clamped a wire between the poles of a permanent magnet.

The student investigated how the force on the wire varied with the current in the wire.

Figure 13 shows the equipment used.

Figure 13



The top pan balance was used to determine the force on the wire.

0 7 . 1 When the switch was closed the reading on the top pan balance increased.

Explain why the increased reading showed that there was an upward force on the wire.

[2 marks]

0 7 . 2 **Table 3** shows the readings on the top pan balance with the switch open and with the switch closed.

Table 3

Switch	Mass in grams
Open	252.3
Closed	254.8

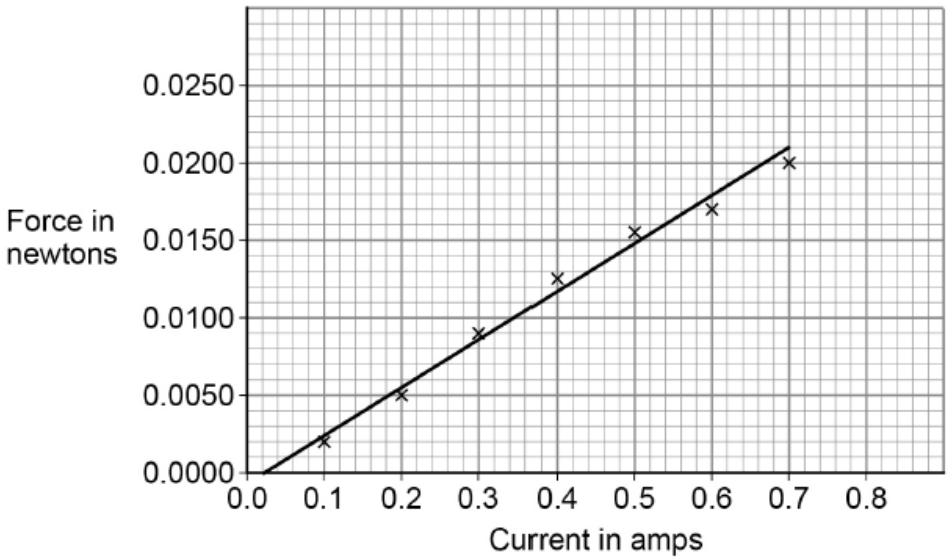
Explain how the values in **Table 3** can be used to determine the size of the force on the wire.

[2 marks]

0 7 . 3 The student varied the current in the wire and calculated the force acting on the wire.

Figure 14 shows the results.

Figure 14



The length of the wire in the magnetic field was 0.125 m

Determine the magnetic flux density.

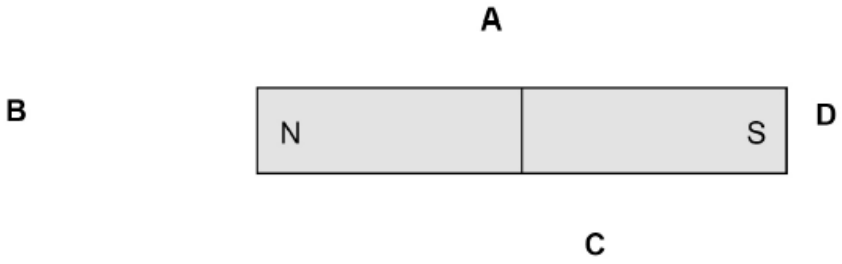
[4 marks]

Magnetic flux density = _____ T

4. June/2019/Paper_2F/No.1(1.2_1.5)

0 1 . 2 **Figure 1** shows a bar magnet.

Figure 1



Which letter shows the position where the magnetic field around the bar magnet is strongest?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 1 . 3 When two magnets are brought close to each other they exert a force on each other.

Describe how two bar magnets can be used to demonstrate a force of attraction and a force of repulsion.

[2 marks]

Force of attraction _____

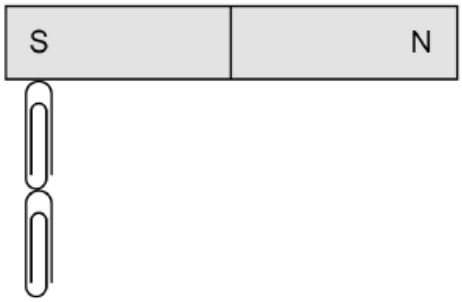
_____

Force of repulsion _____

_____

Figure 2 shows some paper clips that are attracted to a permanent magnet.

Figure 2



0 1 . 4 The paperclips become magnetised when they are close to the permanent magnet.

What is the name of this type of magnetism?

[1 mark]

Tick (✓) **one** box.

Forced magnetism ☐

Induced magnetism ☐

Strong magnetism ☐

0 1 . 5 Label the north and south poles of the two magnetised paper clips in **Figure 2**.

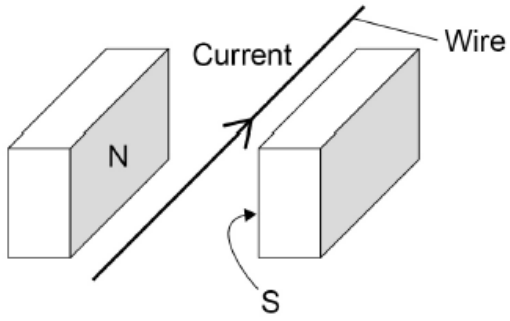
[2 marks]

5. June/2019/Paper_2H/No.4

0 4 **Figure 6** shows a wire in a magnetic field.

The direction of the current in the wire is shown.

Figure 6

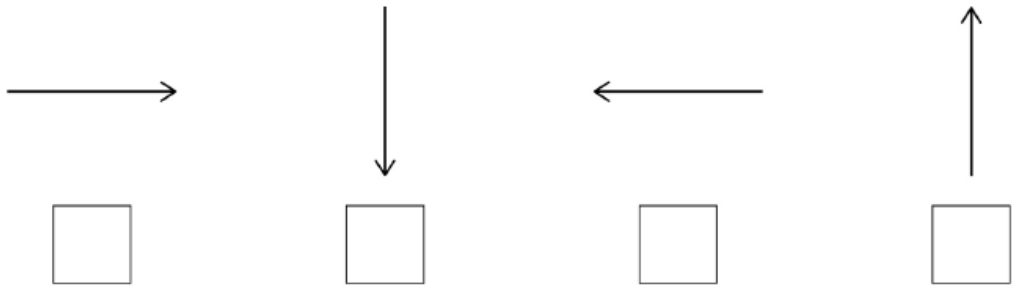


0 4 . 1 There is a force on the wire due to the current in the magnetic field.

In which direction is the force on the wire?

[1 mark]

Tick (✓) **one** box.



0 4 . 2 Give **two** ways that the direction of the force on the wire could be reversed.

[2 marks]

1 _____

2 _____

0 4 . 3 The length of the wire in the magnetic field is 0.050 m

The force on the wire is 0.072 N

magnetic flux density = 360 mT

Calculate the current in the wire.

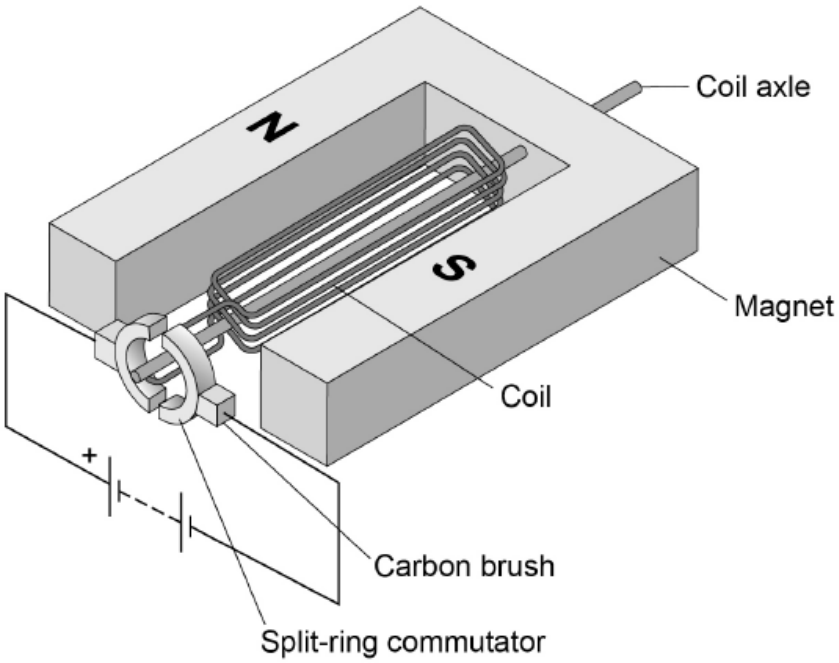
Use the Physics Equations Sheet.

[4 marks]

Current = _____ A

0 4 . 4 **Figure 7** shows a simple motor.

Figure 7



Explain why the coil rotates when there is a current in the coil.

[4 marks]