

The Motor Effect

Question Paper

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Physics
Exam Board	AQA
Topic	6.7 Magnetism and Electromagnetism
Sub-Topic	The Motor Effect
Difficulty Level	Bronze Level
Booklet	Question Paper

Time Allowed: 15 minutes

Score: /14

Percentage: /100

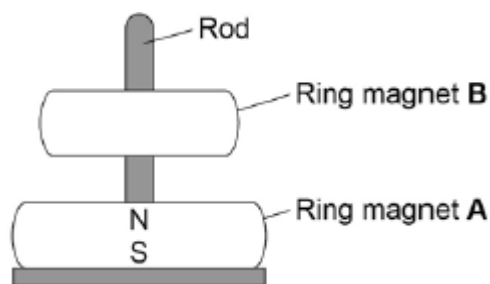
Grade Boundaries:

Q1. A magnetic toy uses ring-shaped magnets.

Look at **Figure 1**.

The magnets can move up and down the rod. Ring magnet **B** appears to float.

Figure 1



- (a) The magnetic poles are labelled on ring magnet **A**.

Label the magnetic poles on ring magnet **B**.

(1)

- (b) What would happen if ring magnet **B** was turned upside down?

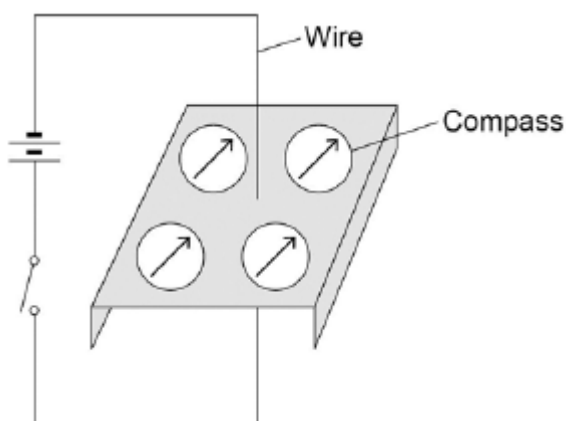
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(1)

- (c) **Figure 2** shows four plotting compasses arranged around a wire.

The needle of a compass is a magnet.

Figure 2



In **Figure 2** the switch is open and there is no current in the wire.

Explain why the compass needles all point in the same direction.

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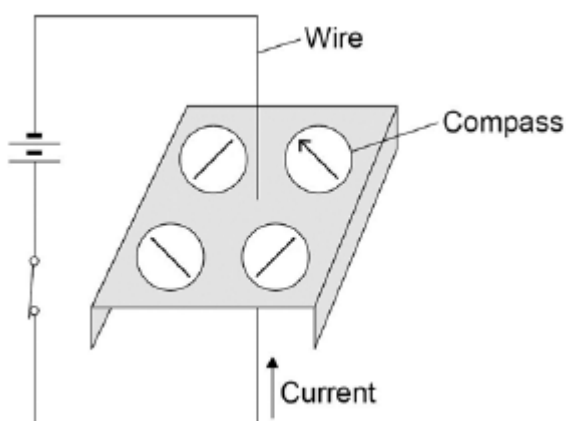
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(2)

(d) **Figure 3** shows the switch closed.

Figure 3



There is now a current in the wire.

The compass needles change direction.

On **Figure 3** draw arrowheads on the three incomplete compass needles to show their direction.

(1)

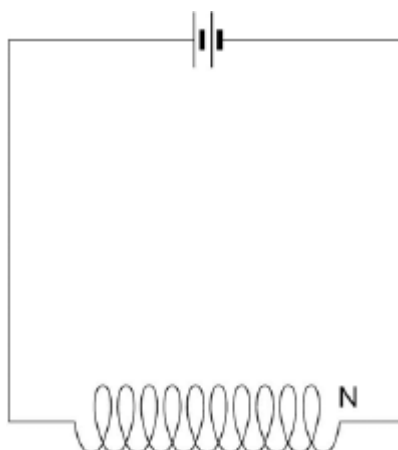
- (e) What would happen to the direction of the compass needles if the current was reversed?

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(1)

- (f) **Figure 4** shows a coil of wire in a circuit.

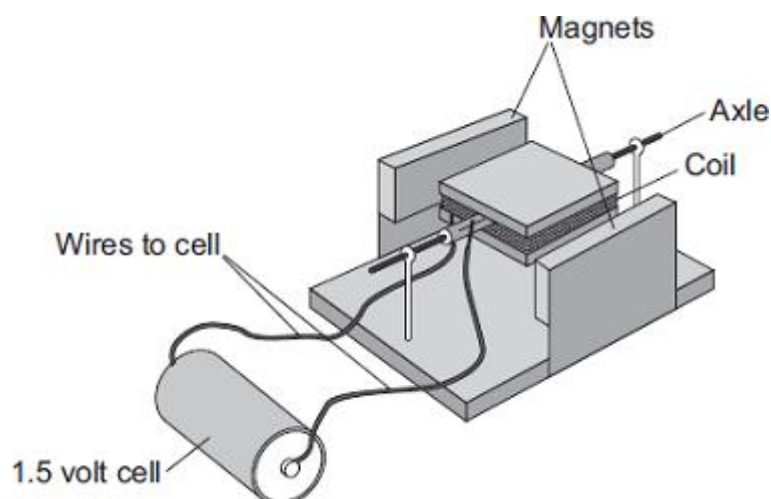
Figure 4



On **Figure 4** draw the magnetic field due to the current in the coil.

(3)
(Total 9 marks)

Q2.A student has made a simple electric motor. The diagram shows the electric motor.



- (a) Complete the following sentence by drawing a ring around the correct line in the box.

Once the coil is spinning, one side of the coil is pushed by

the cell
the coil
a force

and the other

side is pulled, so the coil continues to spin.

(1)

- (b) Suggest **two** changes to the electric motor, each one of which would make the coil spin faster.

1

.....

2

.....

(2)

- (c) Suggest **two** changes to the electric motor, each one of which would make the coil spin in the opposite direction.

1

.....

2

.....

(2)
(Total 5 marks)