

- 1 The mains input (primary) potential difference (p.d.) to a transformer is 230 V a.c.

The number of turns on the input (primary) coil is 314. The number of turns on the output (secondary) coil is 150.

Calculate the output (secondary) p.d. from the transformer.

output p.d. = V [3]

[Total: 3]

- 2 Diagram A shows a wire passing through a card. There is a large electric current in the wire in the direction shown. Diagram B shows the same arrangement when viewed from above the card.

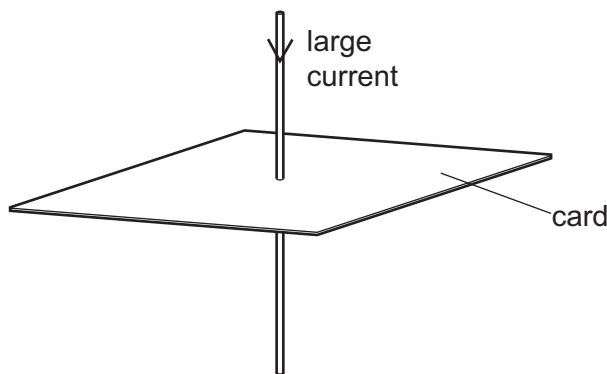


Diagram A

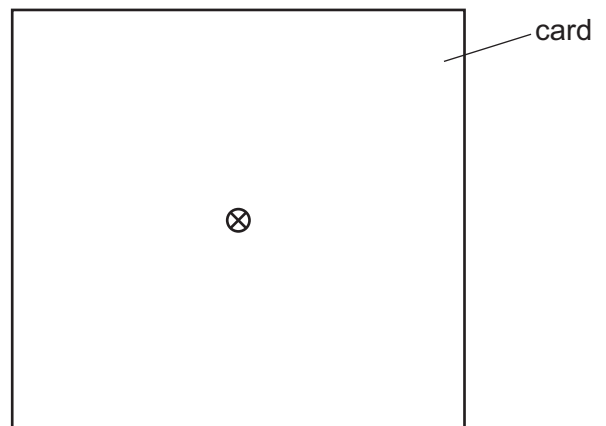


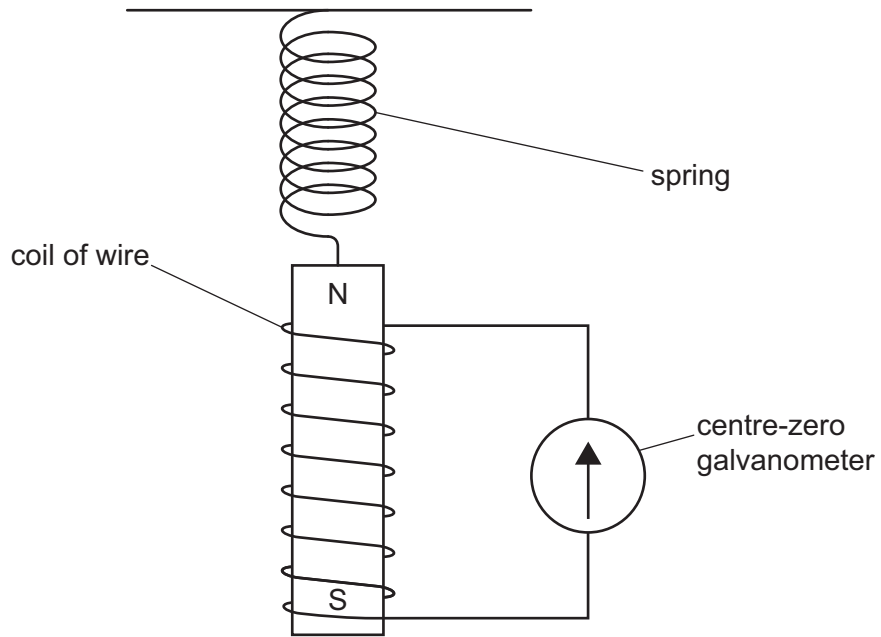
Diagram B

There is a pattern of magnetic field lines around the wire due to the current in the wire.

On diagram B, draw the pattern and direction of the magnetic field as if viewed from above the card. [3]

[Total: 3]

- 3 The diagram shows a magnet on the end of a spring and a coil of wire connected to a sensitive centre-zero galvanometer. The magnet can move freely through the coil.



(a) The magnet is pulled down and released.

Describe and explain what happens to the needle of the sensitive galvanometer.

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.....
..... [4]

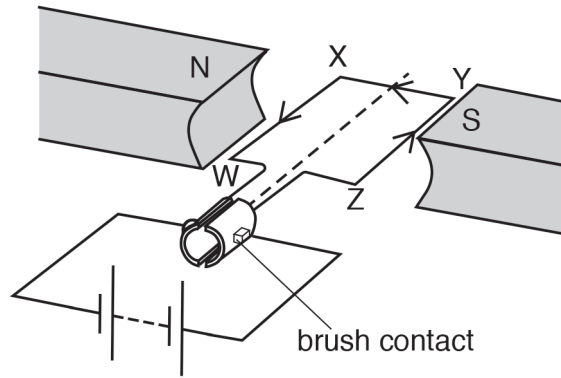
(b) The magnet is replaced with a stronger magnet.

State the effect of using a stronger magnet on what happens to the needle of the galvanometer.

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..... [1]

[Total: 5]

4 The diagram shows a simple electric motor.



(a) There is a current in the coil WXYZ. The direction of this current is shown by the arrows.

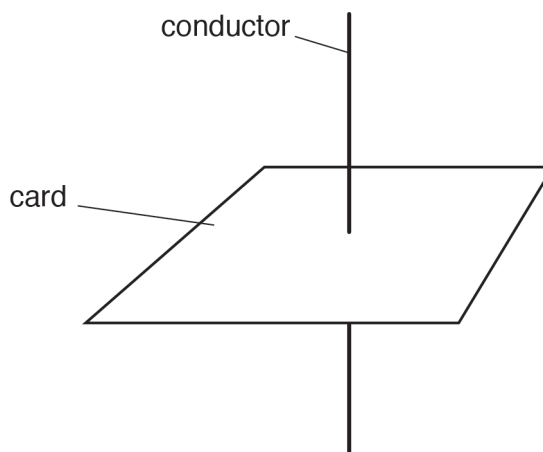
On the diagram, draw an arrow to show the direction of the force acting on side WX and an arrow to show the direction of the force acting on side YZ. [1]

(b) State **three** ways of increasing the turning effect of the motor.

1.
2.
3. [3]

[Total: 4]

5 The diagram shows a vertical conductor passing through a horizontal piece of card.



(a) On the diagram, draw a cell and a switch in series with the conductor to form a complete circuit.

Use the correct circuit symbols.

[2]

(b) A student sprinkles iron filings onto the card and closes the switch. There is a current in the conductor. Describe the pattern of the magnetic field seen.

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..... [2]

(c) The student reverses the direction of the current in the conductor. State the effect, if any, on the pattern he sees.

..... [1]

[Total: 5]