

7 Diagram 1 shows a loop of wire connected to a power supply.

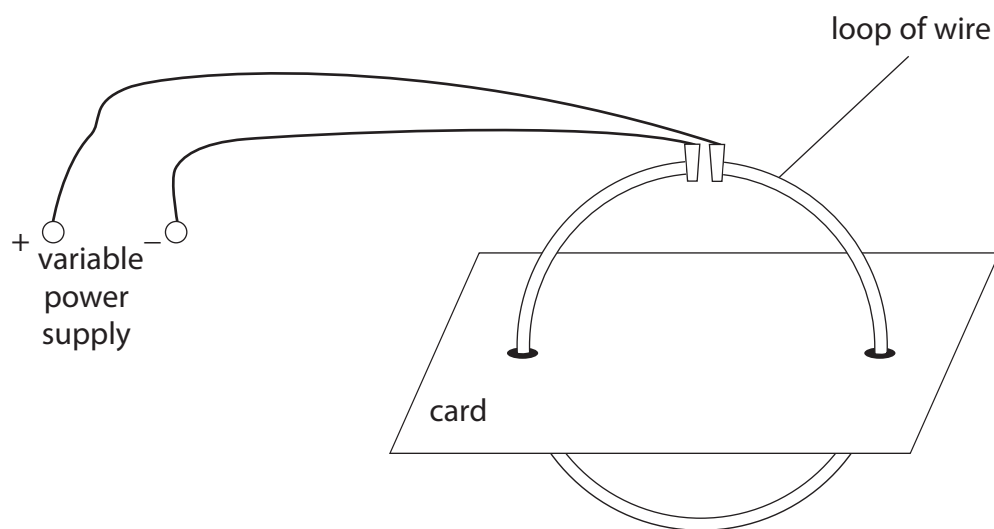


Diagram 1

(a) Describe how to find the shape of the magnetic field produced by the loop of wire.

(3)

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- (b) Diagram 2 shows the view from above the card with two cross-sections of the loop of wire.

Key

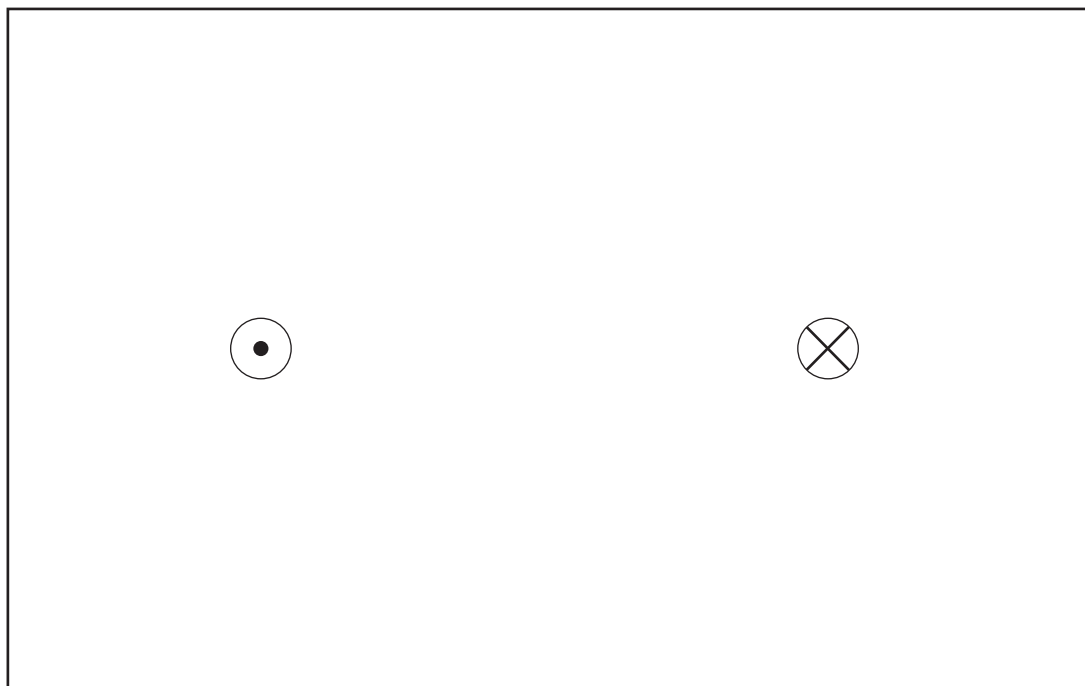
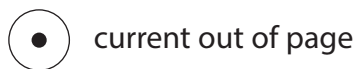


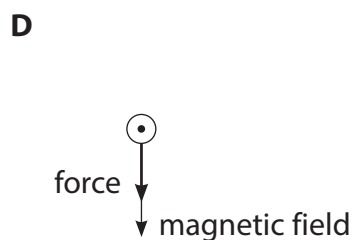
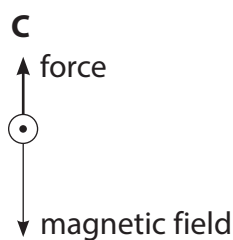
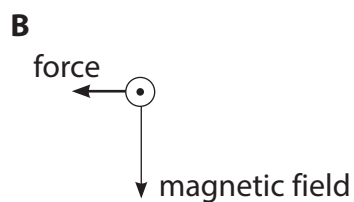
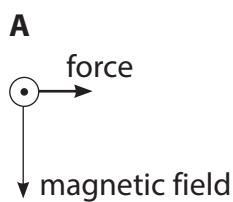
Diagram 2

On diagram 2, draw the magnetic field produced by the two cross-sections of the loop of wire.

(4)



- (c) (i) These diagrams show the magnetic field acting on a cross-section of wire when the current in the wire is out of the page.



Which diagram shows the correct direction of the force acting on the cross-section of wire due to the magnetic field?

(1)

- ☐ **A**
- ☐ **B**
- ☐ **C**
- ☐ **D**



- (ii) The magnetic field acting on the cross-section of wire is produced by the current in the other side of the loop of wire.

Explain why there is no effect on the direction of the force on the cross-section of wire when the direction of the current in the loop is reversed.

(2)

(Total for Question 7 = 10 marks)

