

GCSE Physics B (Twenty First Century Science)
J259/04 Depth in physics (Higher Tier)

Question Set 25

Multiple Choice Questions

1

Amaya sets up the circuit in **Fig. 5.1** to investigate an electrical scent burner.

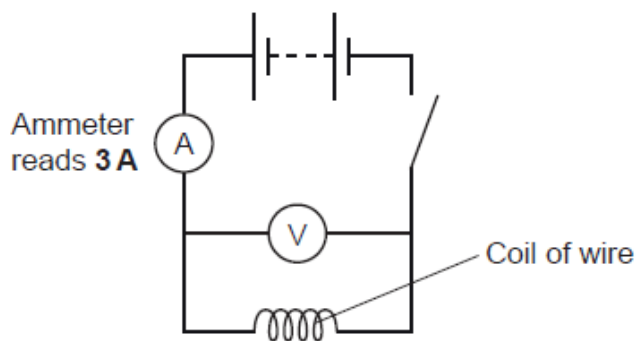


Fig. 5.1

(a) What is needed for a current to flow in any circuit?

Tick (✓) **two** boxes.

- | | |
|----------------------|--------------------------|
| Ammeter | <input type="checkbox"/> |
| Closed Circuit | <input type="checkbox"/> |
| Filament Lamp | <input type="checkbox"/> |
| Potential Difference | <input type="checkbox"/> |
| Switch | <input type="checkbox"/> |
| Voltmeter | <input type="checkbox"/> |

[1]

(b) (i) Calculate the charge flowing through the ammeter when the switch is closed for 2 minutes, using **Fig. 5.1**.

Give the correct **unit**.

Charge = Unit **[4]**

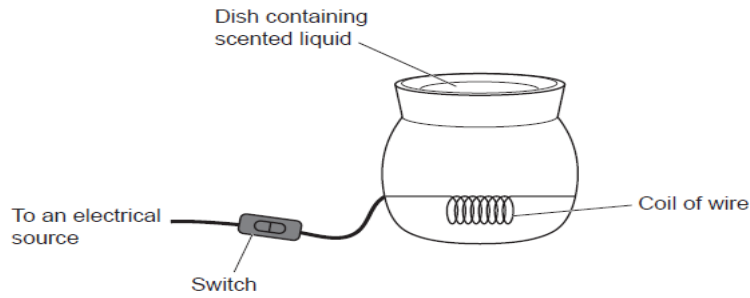
(ii) When the switch is closed for 2 minutes, the work done by the battery on the electrons in the circuit is 2160 J.

Calculate the potential difference across the battery.

Use your answer to **(b)(i)**.

Potential difference = V **[3]**

- (c) In an electrical scent burner the coil of wire in the circuit heats liquid so it turns into a vapour.



Amaya calculates the resistance for three different lengths of the same wire, using her circuit from Fig. 5.1.

Wire	Length (mm)	Resistance (Ω)
A	20	0.18
B	10	0.14
C	5	0.11

[3]

Explain which wire, **A**, **B**, or **C**, will have the greatest heating effect in the electrical scent burner.

- (d) Amaya wants to investigate the effect of adding another coil of wire connected in parallel.

She sets up the circuit in Fig. 5.2.

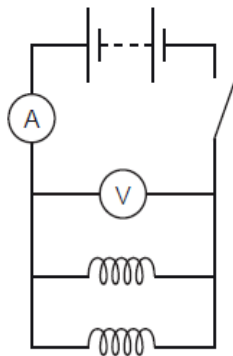


Fig. 5.2

Amaya

The ammeter reading should decrease when you connect another coil of wire in parallel.



Do you agree with Amaya?

Yes

No

Explain your answer.

[3]

Total Marks for Question Set 25: 14

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