

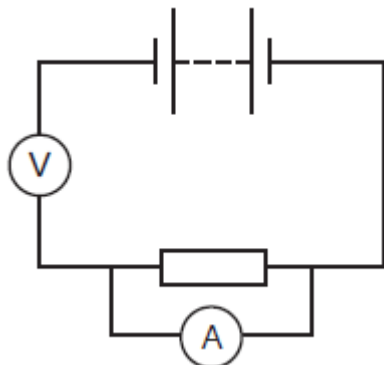
GCSE Physics A (Gateway)

J249/01 Physics A P1-P4 and P9 (Foundation Tier)

Question Set 10

- 1 (a) A student sets up a circuit to find out the resistance of an unknown resistor. The student makes **three** mistakes in their circuit.

Look at the circuit diagram of their experiment.



- (a) (i) Write down the **three** mistakes the student makes. not an ammeter
- 1 potential difference across resistor is measured by a voltmeter ✓
 - 2 current is measured with ammeter not voltmeter
 - 3 The (polarity is reversed)
V (needs to be -, +, -, +) [3]

- (ii) For **one** of the mistakes identified in (a)(i) describe how the student can fix the error.
- ammeter and voltmeter should be swapped around [1]

- (b) The student finds that the current is 20 mA when the potential difference is 4.0 V. Calculate the **resistance** of the unknown resistor. Include the **unit** for resistance in your answer.

Use the equation: resistance = potential difference ÷ current.

$$R = \frac{4}{20 \times 10^{-3}} = 200$$

Resistance = 200 Unit = Ω

[4]

- (c) Calculate the charge that flows when a current of 2.5 A flows for 30 seconds.

$$\begin{aligned} Q &= It \\ &= 2.5 \times 30 \\ &= 75 \end{aligned}$$

Charge = 75 C [3]

Total Marks for Question Set 10: 11

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