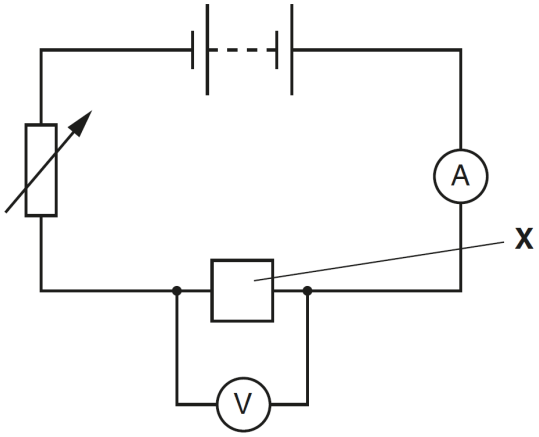
Oxford Cambridge and RSA

GCSE Physics A (Gateway)

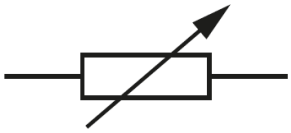
J249/03 Physics A P1-P4 and P9 (Higher Tier)

Question Set 1

1 **(a)** A student builds a circuit to investigate the resistance of component **X**.



(a) **(i)** What is the name of this component?



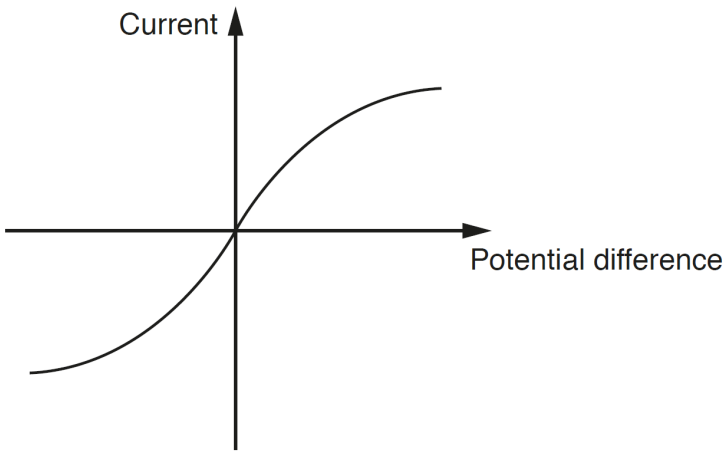
[1]

(ii) Why is this component needed in this circuit?

[1]

(b) The student uses the circuit to take current and potential difference readings.

The student plots a graph of her results.



(i) Look at the graph.

What is component **X** in the circuit?

[1]

(ii) The resistance of component **X** varies as the potential difference changes.

Describe **how** the graph shows this and explain **why** this happens.

[3]

(c) Component **X** has a resistance of 16 Ω when a current of 0.25A flows.

(i) Calculate the potential difference across component **X**.

Use the equation: Potential difference = Current × Resistance

Answer = ... V

[2]

(ii) Calculate the power of component **X** when a current of 0.25A flows.

Answer = ... W

[3]

Total Marks for Question Set 1: 11