Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Electricity (Low Demand)

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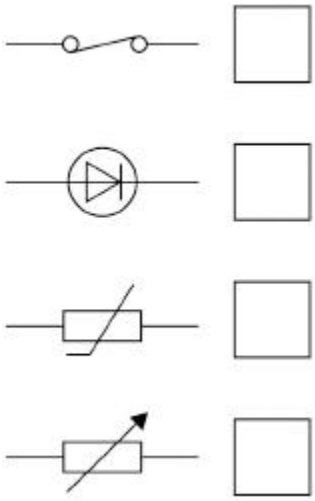
Name of the Student:_____
Max. Marks : 25 Marks **Time : 25 Minutes**

Q1.

A gardener wanted to build an electrical circuit to monitor the temperature in a greenhouse.

(a) Which symbol represents an electrical component with a resistance that decreases as its temperature increases?

Tick (✓) **one** box.



(1)

(b) When the resistance of an electrical circuit decreases, the current in the circuit increases.

Complete the sentence.

Choose the answer from the box.

charge	**energy**	**potential difference**	**power**

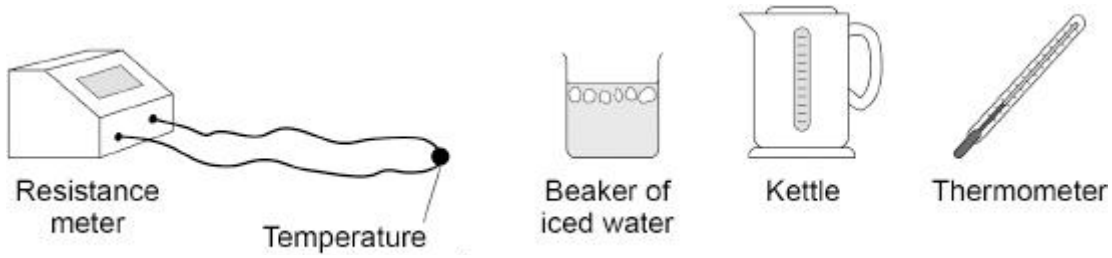
Electrical current is a flow of _____.

(1)

(c) The gardener wanted to find how the resistance of the component varies with temperature.

Figure 1 shows the equipment used by the gardener.

Figure 1



The resistance meter displays the resistance of the component.

Plan a method the gardener could use to find how the resistance of the component varies with temperature.

_____

_____

_____

_____

_____

_____

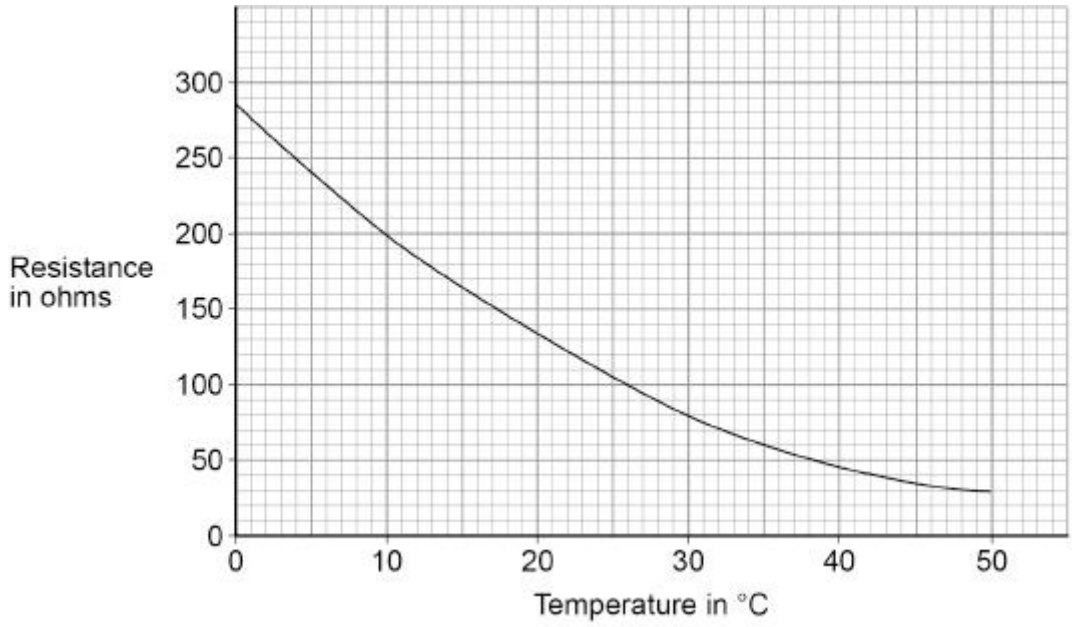
_____

_____

(4)

Figure 2 shows how the resistance of the component varies with temperature.

Figure 2



(d) Complete the sentence.

Choose the answer from the box.

linear	non-linear	directly proportional

The relationship between the temperature and the resistance of the component

is _____.

(1)

(e) The temperature in the greenhouse changed from 10 °C to 30 °C.

Determine the change in resistance of the component between these temperatures.

Use **Figure 2**.

_____

_____

_____

Change in resistance = _____ Ω

(2)

The gardener builds a circuit that switches a heater on when the greenhouse gets too cold.

Use the Physics Equations Sheet to answer parts (f) and (g).

(f) Write down the equation that links current (*I*), potential difference (*V*) and power (*P*).

_____

_____

(1)

(g) The power of the heater is 2900 W.

The potential difference across the heater is 230 V.

Calculate the current in the heater.

_____

_____

_____

_____

_____

Current = _____ A

(3)

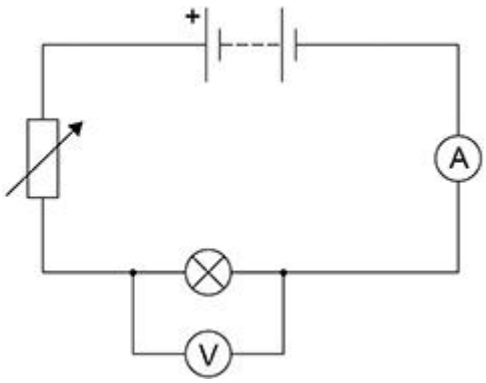
(Total 13 marks)

Q2.

A student investigated how the potential difference across a filament lamp affects the current in the lamp.

Figure 1 shows the circuit the student used.

Figure 1



(a) **Figure 2** shows a circuit symbol.

Figure 2

What component does the symbol represent?

Tick (✓) **one** box.

Ammeter ☐

Battery ☐

Lamp ☐

Variable resistor ☐

(1)

(b) Which component from **Figure 1** did the student use to adjust the potential difference across the lamp?

_____

(1)

(c) When the voltmeter was **not** connected to the circuit it gave a reading of 0.4 volts.

How can the student correct all the readings taken from the voltmeter?

Tick (✓) **one** box.

Add 0.4 volts to each reading ☐

Divide each reading by 0.4 volts ☐

Multiply each reading by 0.4 volts ☐

Subtract 0.4 volts from each reading ☐

(1)

(d) The student recorded three values of current for each potential difference.

The table below shows the results for 2.5 volts.

Potential difference in volts	**Current in amps**		
	1	2	3
2.5	0.54	0.58	0.53

Calculate the mean current in the lamp.

_____

_____

_____

_____

Mean current = _____ A

(2)

(e) Calculate the power of the lamp when the potential difference across the lamp was 4.8 V

The current in the lamp was 0.75 A

Use the equation:

power = potential difference × current

_____

_____

_____

_____

Power = _____ W

(2)

(f) Calculate the resistance of the lamp when the potential difference across the lamp was 4.8 V

The current in the lamp was 0.75 A

Use the equation:

resistance = $\frac{\text{potential difference}}{\text{current}}$

Resistance = _____ Ω

(2)

(g) Complete the sentence.

Choose answers from the box.

Each answer may be used once, more than once or not at all.

decrease	**increase**	**stay the same**

Increasing the current in a filament lamp makes the temperature

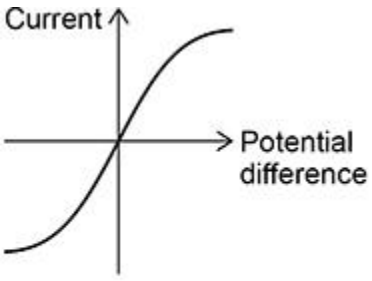
of the lamp _____ and the

resistance of the lamp _____.

(2)

(h) Which graph shows the relationship between potential difference and current for a filament lamp?

Tick (✓) **one** box.



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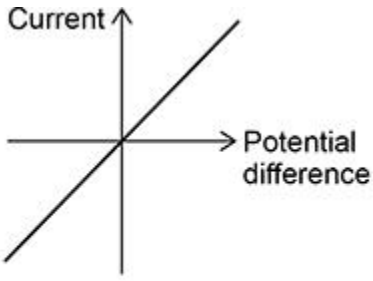

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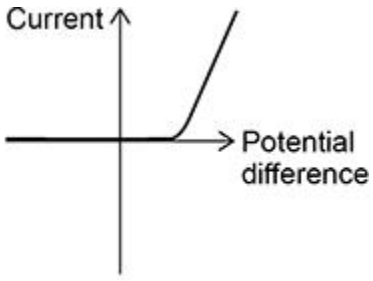

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(1)

(Total 12 marks)