Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Electricity (Standard demand)

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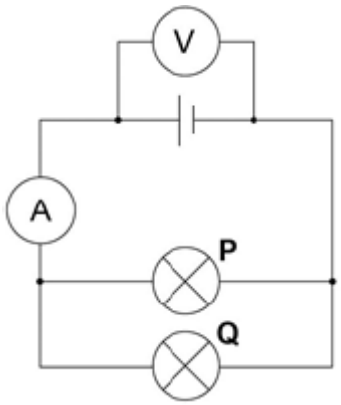
Name of the Student:_____
Max. Marks : 25 Marks **Time : 25 Minutes**

Q1.

Figure 1 shows a circuit diagram containing two identical lamps arranged in parallel.

The reading on the ammeter is 186 mA.

Figure 1



(a) Which statement about the current through the lamps is true?

Tick **one** box.

The current through both lamp **P** and lamp **Q** is **0.093 A** ☐

The current through both lamp **P** and lamp **Q** is **0.186 A** ☐

The current through both lamp **P** and lamp **Q** is **0.93 A** ☐

The current through both lamp **P** and lamp **Q** is **1.86 A** ☐

(1)

(b) One of the lamps breaks and is not replaced.

Which statement about the current in the other lamp is true?

Tick **one** box.

The current through the lamp is **0.093 A** ☐

The current through the lamp is **0.186 A** ☐

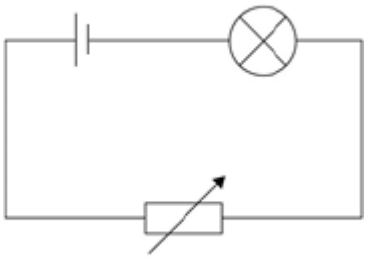
The current through the lamp is **0.93 A** ☐

The current through the lamp is **1.86 A** ☐

(1)

(c) **Figure 2** shows a circuit that can be used to alter the brightness of a lamp.

Figure 2



The resistance of the variable resistor is increased.

What effect will this have on the brightness of the lamp?

Explain your answer.

_____

_____

_____

_____

(2)

(d) When the potential difference across the lamp is 3.3 V, the current is 0.15 A.

Write down the equation that links current, potential difference and resistance.

Equation _____

(1)

(e) Calculate the resistance of the lamp.

_____

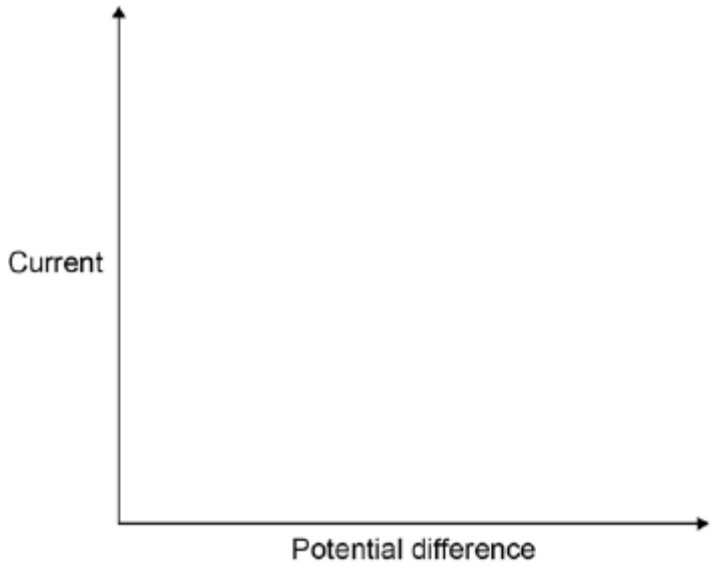
_____

_____

Resistance = _____ Ω

(3)

(f) Sketch a current–potential difference graph for a filament lamp.



(1)

(Total 9 marks)

Q2.

A small community of people live in an area in the mountains.
The houses are not connected to the National Grid.

The people plan to buy an electricity generating system that uses either the wind or the flowing water in a nearby river.

Figure 1 shows where these people live.

Figure 1

(a) It would not be economical to connect the houses to the National Grid.
Give **one** reason why.

_____

_____

_____

_____

(1)

(b) **In this question you will be assessed on using good English, organising information**

clearly and using specialist terms where appropriate.

Information about the two electricity generation systems is given in **Figure 2**.

Figure 2

The wind turbine costs £50 000 to buy and install.
The hydroelectric generator costs £20 000 to buy and install.
The average power output from the wind turbine is 10 kW.
The hydroelectric generator will produce a constant power output of 8 kW.

Compare the advantages and disadvantages of the two methods of generating electricity.

Use your knowledge of energy sources as well as information from **Figure 2**.

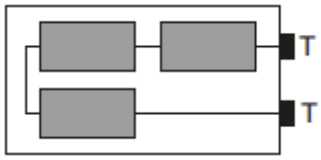
(6)

(Total 7 marks)

Q3.

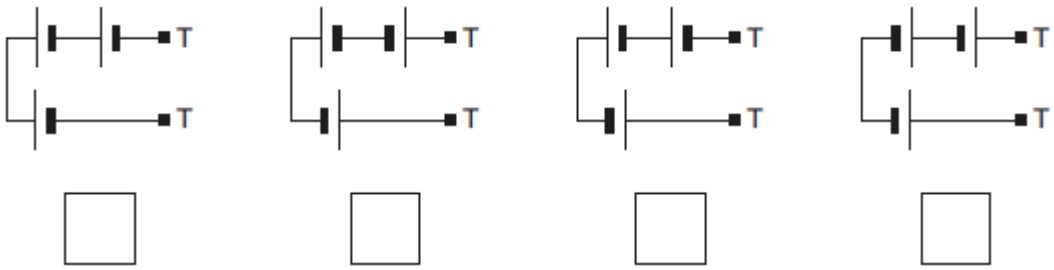
(a) **Figure 1** shows the inside of a battery pack designed to hold three identical 1.5 V cells.

Figure 1



Which **one** of the arrangements shown in **Figure 2** would give a 4.5 V output across the battery pack terminals **T**?

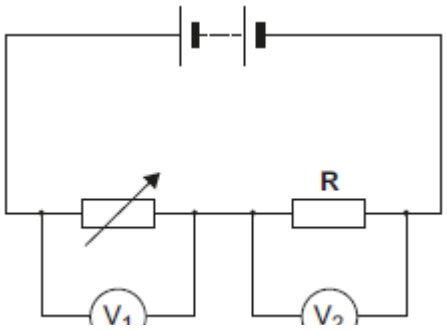
Figure 2



(1)

(b) **Figure 3** shows a variable resistor and a fixed value resistor connected in series in a circuit.

Figure 3



Complete **Figure 3** to show how an ammeter would be connected to measure the current through the circuit.

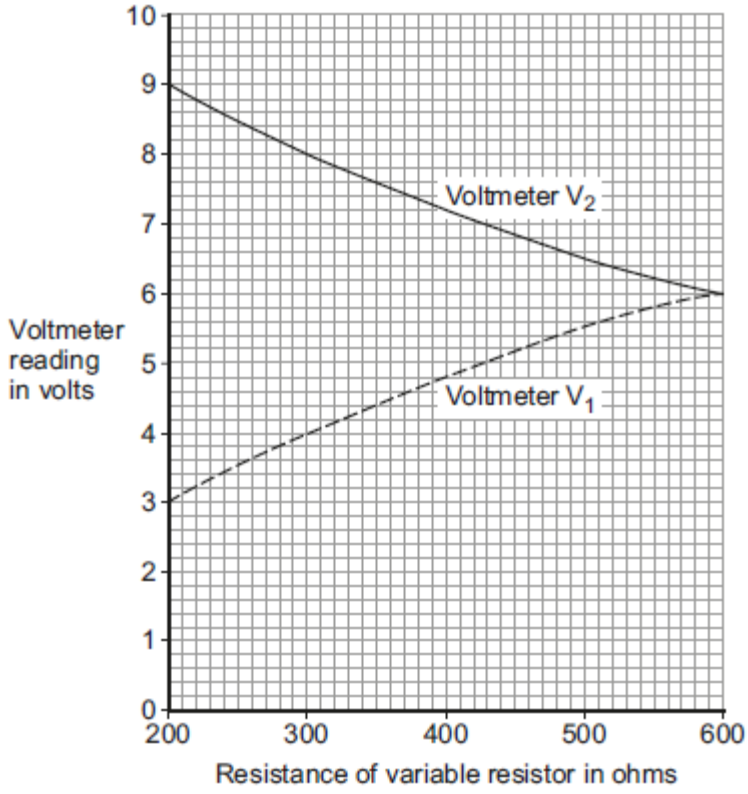
Use the correct circuit symbol for an ammeter.

(1)

(c) The variable resistor can be adjusted to have any value from 200 ohms to 600 ohms.

Figure 4 shows how the reading on voltmeter $\mathbf{V_1}$ and the reading on voltmeter $\mathbf{V_2}$ change as the resistance of the variable resistor changes.

Figure 4



(i) How could the potential difference of the battery be calculated from **Figure 4**?

Tick (✔) **one** box.

9 + 3 = 12 V ☐

9 – 3 = 6 V ☐

9 ÷ 3 = 3 V ☐

Give the reason for your answer.

_____

_____

(2)

(ii) Use **Figure 4** to determine the resistance of the fixed resistor, **R**.

Resistance of R = _____ Ω

Give the reason for your answer.

_____

_____

(2)

(iii) Calculate the current through the circuit when the resistance of the variable resistor equals 200 Ω.

_____

_____

_____

Current = _____ A

(3)

(Total 9 marks)