

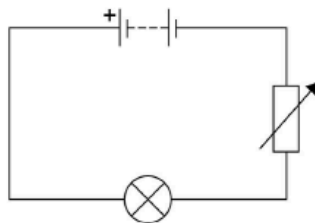
Electricity

Past Paper Questions AQA Physics GCSE

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

Figure 1 shows part of the circuit used.

Figure 1



01.

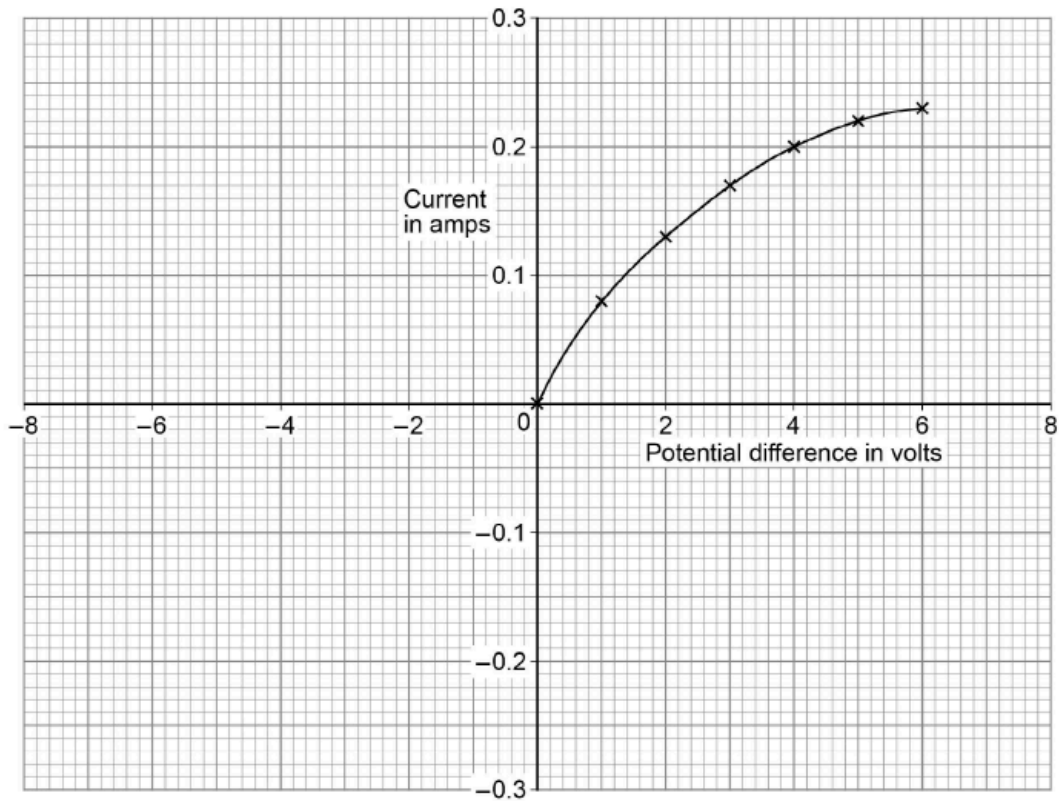
Complete **Figure 1** by adding an ammeter and a voltmeter.

Use the correct circuit symbols.

[3 marks]

Figure 2 shows some of the results.

Figure 2



02.

The student reversed the connections to the power supply and obtained negative values for the current and potential difference.

Draw a line on **Figure 2** to show the relationship between the negative values of current and potential difference.

[2 marks]

03.

Write down the equation which links current (I), potential difference (V) and resistance (R).

[1 mark]

04.

Determine the resistance of the filament lamp when the potential difference across it is 1.0 V.

Use data from **Figure 2**.

[4 marks]

Resistance = _____ Ω

05.

A second student did the same investigation. The ammeter used had a zero error.

What is meant by a zero error?

[1 mark]

Figure 3 shows an LED torch.

Figure 3



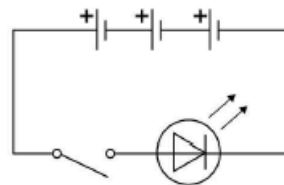
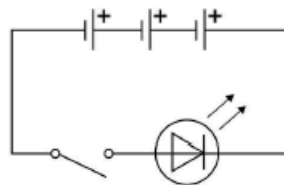
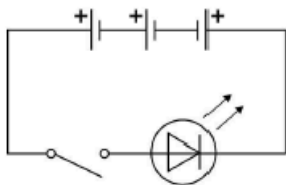
06.

The torch contains one LED, one switch and three cells.

Which diagram shows the correct circuit for the torch?

[1 mark]

Tick (✓) **one** box.



07.

Write down the equation which links charge flow (Q), current (I) and time (t).

[1 mark]

08.

The torch worked for 14 400 seconds before the cells needed replacing.

The current in the LED was 50 mA.

Calculate the total charge flow through the cells.

[3 marks]

Total charge flow = _____ C

09.

When replaced, the cells were put into the torch the wrong way around.

Explain why the torch did not work.

[2 marks]

10.

Write down the equation which links efficiency, total power input and useful power output.

[1 mark]

11.

The total power input to the LED was 0.24 W.

The efficiency of the LED was 0.75

Calculate the useful power output of the LED.

[3 marks]

Useful power output = _____ W