OCR
Oxford Cambridge and RSA

GCSE Physics A (Gateway)

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

Question Set 19

19 A student takes voltage and current measurements for four resistors (**A**, **B**, **C** and **D**).

The table shows the results from this experiment.

Resistor	Voltage (V)	Current (A)	Resistance (Ω)
A	12.0	2.0	
B	6.0	1.5	
C	7.5	1.5	
D	8.0	2.0	

(a) Which two resistors have the same resistance value?

Use the results to show this.

[2]

(b) Calculate the maximum resistance that can be made using all four resistors.

Answer = ... Ω

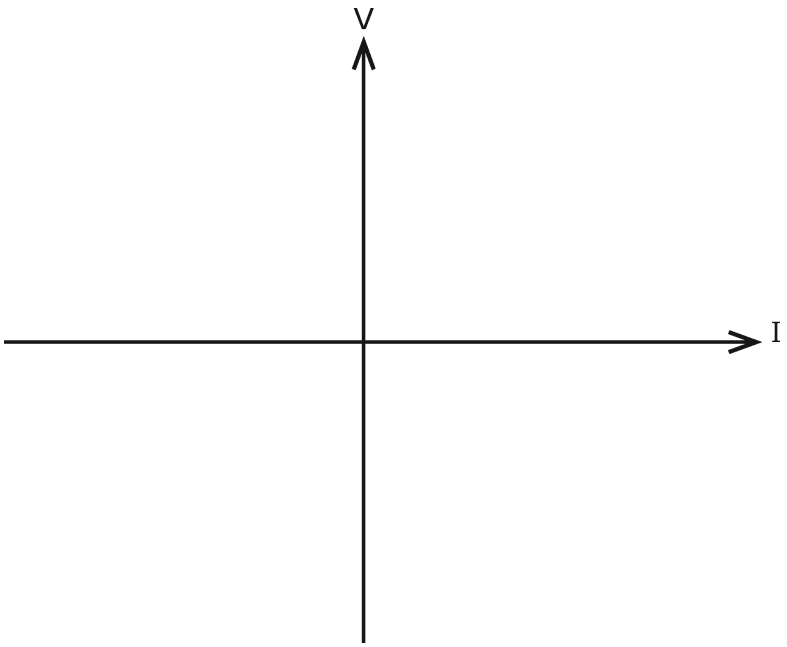
[1]

(c) **(i)** Draw a circuit diagram that could be used to find out how the resistance of a filament bulb changes with current.

Describe the readings you need to take.

[4]

(ii) Sketch the shape of the graph from **(c)(i)** using the axes below.

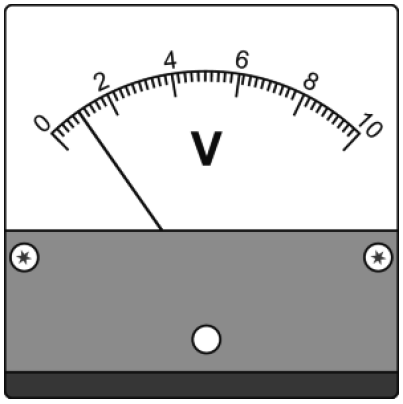


State how this graph can be used to calculate resistance at any specific value of current.

[2]

(d) A voltmeter is used to measure the output voltages produced from the circuit.

The voltmeter is **not** connected to a circuit and **not** recording a voltage.



Name the type of error on the voltmeter and suggest how it should be dealt with.

[2]

Total Marks for Question Set 19: 11