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# Gateway Science Physics A

## **J249/01 Physics A** P1-P4 and P9 (Foundation Tier)

# Question Set 22

**22** A student finds a resistor which has no markings on it.

The student uses a voltmeter, an ammeter and a cell to find the resistance of the resistor.

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**(a)** Draw a circuit diagram to show how the student could set up this apparatus to find the resistance of the resistor.

**[3]**

**(b)** In the experiment the current is 0.15 A and the potential difference is 2.0 V.

**potential difference = current × resistance**

Calculate the resistance of the unknown resistor.

Show your working.

Record your answer to **3** significant figures.

Answer = ..... Ω

**[3]**

**(c)** The student repeats the experiment with different potential differences and currents.

Look at the results.

| Potential difference (V) | Current (A) (Attempt 1) | Current (A) (Attempt 2) | Current (A) (Attempt 3) | Mean current (A) |
|---|---|---|---|---|
| 2.0 | 0.15 | 0.14 | 0.16 | 0.15 |
| 4.0 | 0.31 | 0.31 | 0.31 | 0.31 |
| 6.0 | 0.44 | 0.44 | 0.38 | 0.44 |
| 8.0 | 0.60 | 0.62 | 0.58 | 0.60 |
| 10.0 | 0.74 | 0.75 | 0.73 | 0.74 |

There is an anomaly in the results.

**(i)** Write down the anomaly from the table.

**[1]**

**(ii)** How did the student deal with the anomaly?

**[1]**

## Total Marks for Question Set 22: 8

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