NEATH PORT TALBOT COLLEGE
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School of Maths & Science
Science Practical

Variation of current with potential difference for a resistor

◆ Aim

To determine the relationship between p.d and current for a resistor and hence calculate its resistance.

◆ Introduction

You will vary the p.d. across a resistor and measure the corresponding current through it. From a graph of p.d. against current the resistance may be determined.

◆ Safety

Control Measures

- You are reminded of the need of good laboratory practice in order to maintain a safe working environment.

Hazards

Electrical hazard — Take care with circuits. Switch off power before connecting and disconnecting the circuit.

Procedure

1. Connect a resistor to a variable power supply.
2. Place an ammeter in series with the resistor to measure the current through the resistor.
3. Place a voltmeter in parallel with the resistor to measure the p.d. across the resistor.
4. Increase the p.d. across the resistor in steps of 1V and note the corresponding current in amps. Repeat until a p.d. of 8V is achieved.
5. Reverse the resistor and repeat, now treating the current and p.d. as negative.

Current positive	**V /Volts**									
	I /Amps									
Current negative	**V/ Volts**									
	I/ Amps									
Average Values	**V/ Volts**									
	I / mA									

6. Plot a graph of p.d, V against current, I**.**
7. Use your graph to find the value of the resistor in the circuit and comment on the number of significant figures used in the final answer.

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8. Determine the percentage uncertainty in resistance.

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9. Determine the percentage difference between the experimental value of resistance and the manufacturers' value form the colour bands.

10. Comment on the accuracy and reliability of the experiment.