

NEATH PORT TALBOT COLLEGE COLEG CASTELL NEDD PORT TALBOT

School of Maths & Science Science Practical

Variation in resistance with temperature for (i) a thermistor and (ii) a metallic heating coil.

◆ Aim

To determine how the resistance of a thermistor and heating coil vary with temperature. To obtain an approximate value for the absolute zero of temperature.

◆ Introduction

You will place a thermistor in some water and measure its resistance on heating. The procedure will be repeated using a metallic heating coil.

◆ Safety



Control Measures

- You are reminded of the need of good laboratory practice in order to maintain a safe working environment. **Goggles and lab coats must be worn at all times.**

Hazards



General hazard.

Take care with heating apparatus

◆ **Apparatus Required**

NTC Thermistor, metallic heating coil, multimeter, water, beaker, tripod, gauze, Bunsen Burner, thermometer or temperature sensing equipment and computer.

◆ **Procedure**

- (i) Connect the multimeter to the thermistor and measure the resistance “R” of the thermistor over a range of temperatures from room temperature to about 95⁰C.
- (ii) Plot a graph of resistance “R” against temperature “T” in ⁰ C.
- (iii) Select a value of “R” and estimate from your graph the temperature increase required for the value of “R” to be halved.
- (iv) Repeat for two more values of “R”.
- (v) Repeat step (i) for the heating coil.
- (vi) Plot a graph of resistance “R” against temperature “T” for the heating coil. Make sure that your temperature axis starts at – 300⁰C
- (vii) Find the value of temperature which results in a resistance of zero. What is the significance of this temperature?
