

- 2 (a) (i) State the magnitude and unit of absolute zero on the thermodynamic temperature scale.

..... [1]

- (ii) Explain why temperature measured using a laboratory liquid-in-glass thermometer does not give a measurement of thermodynamic temperature.

..... [1]

- (b) Fig. 2.1 shows a simplified diagram of a type of thermometer called a platinum resistance thermometer.

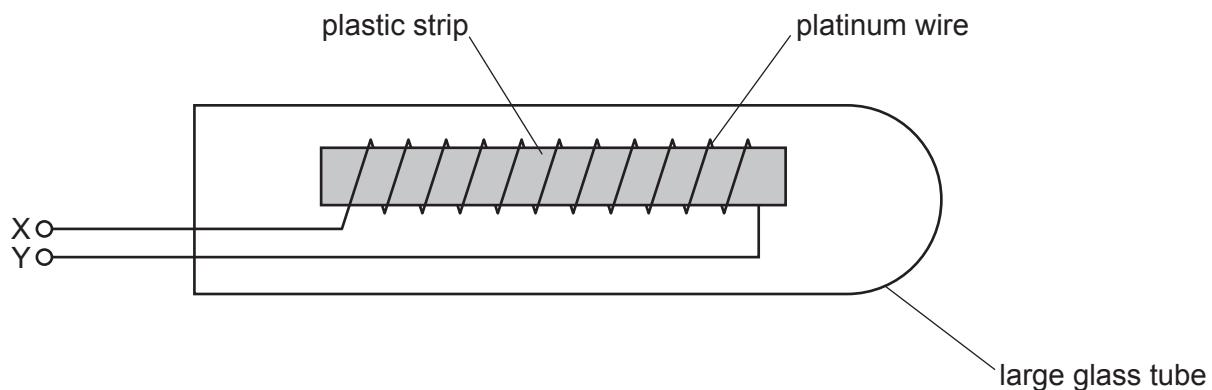


Fig. 2.1

The glass tube is immersed in the environment for which the temperature is to be determined. The resistance between the terminals X and Y is measured.

Fig. 2.2 shows the variation of the resistivity ρ of platinum with thermodynamic temperature T .

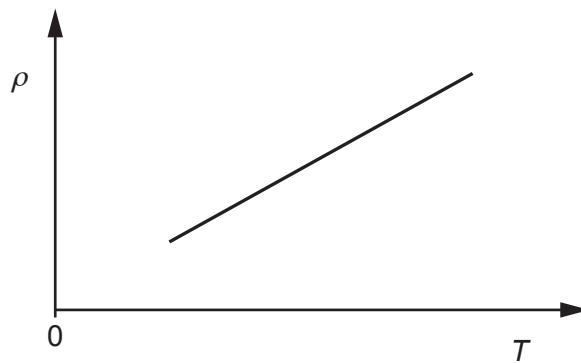


Fig. 2.2

- (i) Explain how Fig. 2.2 shows that platinum is a suitable metal for use in a resistance thermometer.

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[2]

- (ii) Suggest a reason why a platinum resistance thermometer is **not** suitable for measuring a rapidly changing temperature.

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[1]

- (iii) Suggest a type of thermometer that is suitable for measuring a rapidly changing temperature.

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[1]

- (c) A negative temperature coefficient thermistor may be used as a type of resistance thermometer.

State **one** way in which the variation with temperature of the resistance of a thermistor differs from that of a platinum wire.

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[1]