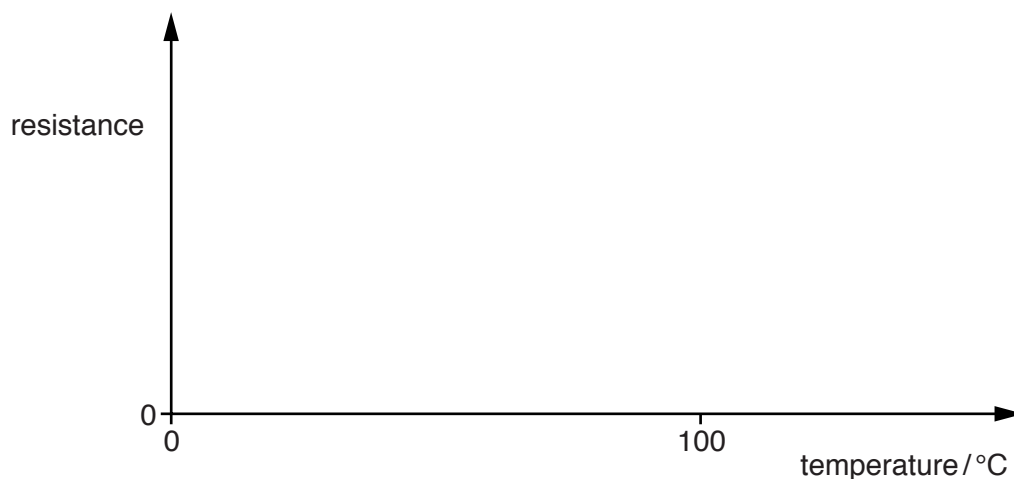


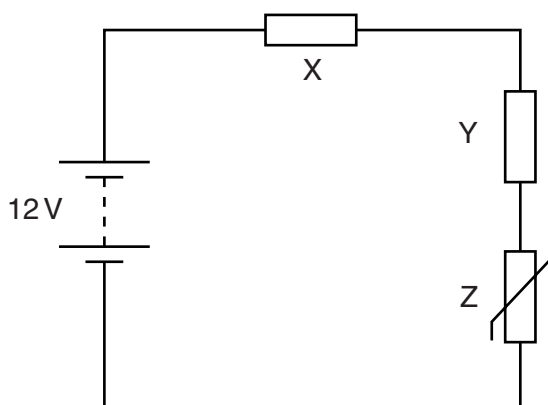
- 5 (a) On Fig. 5.1, sketch the temperature characteristic of a thermistor.



**Fig. 5.1**

[2]

- (b) A potential divider circuit is shown in Fig. 5.2.



**Fig. 5.2**

The battery of electromotive force (e.m.f.) 12 V and negligible internal resistance is connected in series with resistors X and Y and thermistor Z. The resistance of Y is  $15\text{ k}\Omega$  and the resistance of Z at a particular temperature is  $3.0\text{ k}\Omega$ . The potential difference (p.d.) across Y is 8.0 V.

- (i) Explain why the power transformed in the battery equals the total power transformed in X, Y and Z.

..... [1]

- (ii) Calculate the current in the circuit.

current = ..... A [2]

(iii) Calculate the resistance of X.

resistance = .....  $\Omega$  [3]

(iv) The temperature of Z is increased.

State and explain the effect on the potential difference across Z.

.....  
.....  
.....  
..... [2]