

5 (a) State Kirchhoff's first law.

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..... [1]

(ii) With reference to the current in the cell, explain why the current in **resistor R** decreases with increasing temperature of the thermistor.

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..... [3]

(c) The electromotive force (e.m.f.) E of the cell in Fig. 5.1 is 1.50 V. The internal resistance r of the cell is 0.12Ω .

Resistor R has a resistance of 6.00Ω .

At a particular temperature of the thermistor, the current in R is 0.200 A.

For this temperature of the thermistor, determine:

(i) the current in the cell

current = A [2]

(ii) the resistance of the thermistor.

resistance = Ω [2]

[Total: 10]