5 **(a)** State Kirchhoff's first law.

.....

..... [1]

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

.....

.....

.....

.....

..... [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 0.12 Ω.

Resistor R has a resistance of 6.00 Ω.

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]