

- 7 (a) Fig. 7.1 shows two resistors connected in series with a cell of electromotive force (e.m.f.) 1.50 V and internal resistance 0.28 Ω.

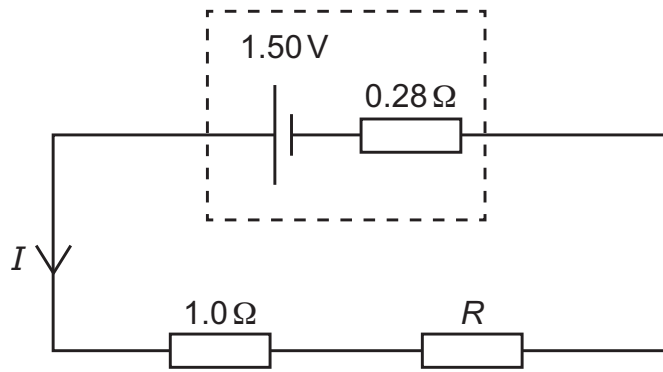


Fig. 7.1

One of the resistors has resistance 1.0 Ω. The other resistor has resistance R . The terminal potential difference (p.d.) across the cell is 1.36 V.

- (i) Show that the current I in the circuit is 0.50 A.

[2]

- (ii) Calculate the combined resistance of the two resistors.

resistance = Ω [2]

- (iii) Use your answer in (a)(ii) to determine resistance R .

$R =$ Ω [1]

- (b) The circuit in Fig. 7.1 is disconnected and the two resistors are reconnected to the cell, now in parallel with each other.

- (i) On Fig. 7.2, complete the circuit diagram to show this arrangement.

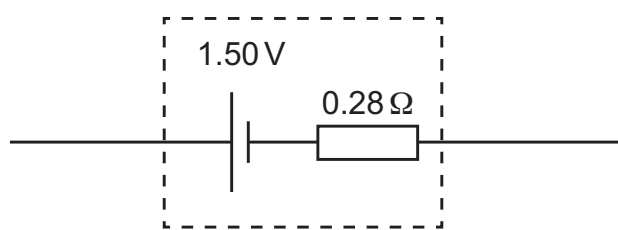


Fig. 7.2

[1]

- (ii) Explain, without calculation, whether the terminal p.d. across the cell is now less than, equal to or greater than 1.36 V.

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 [2]

[Total: 8]