

- 6 (a) Fig. 6.1 shows a uniform wire XY of length 150.0 cm and resistance $4.5\ \Omega$ connected in series with a cell Z of electromotive force (e.m.f.) 3.0 V with internal resistance $0.50\ \Omega$.

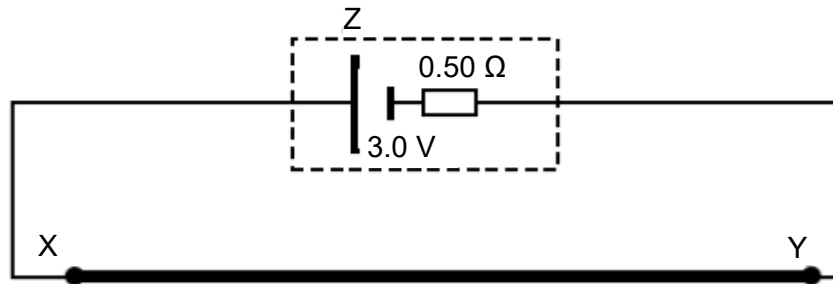


Fig. 6.1

- (i) State what is meant by *electromotive force* of a cell.

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..... [1]

- (ii) Show that the potential difference between X and Y is 2.7 V.

[1]

- (b) Another circuit consisting of a cell W in series with $1.0\ \Omega$ and $2.0\ \Omega$ resistors is connected to positions X and P which are 80.0 cm apart as shown in Fig. 6.2.

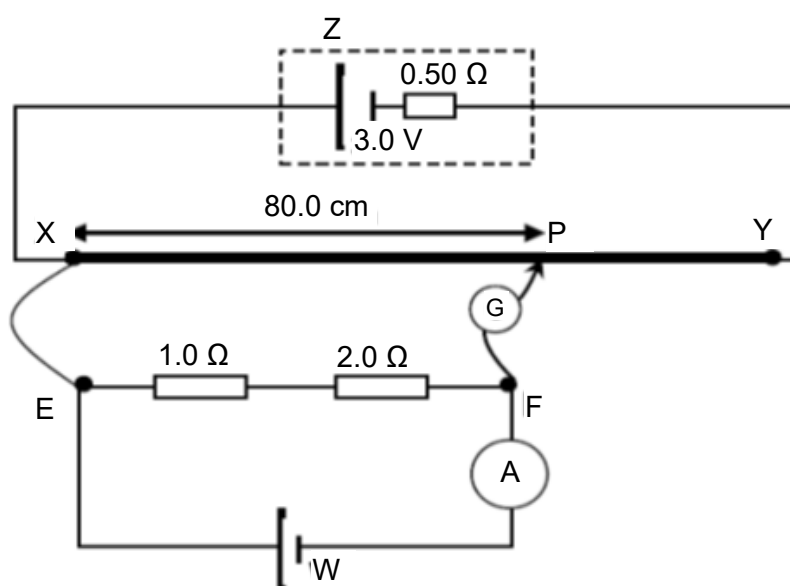


Fig. 6.2 (not drawn to scale)

If the galvanometer shows null deflection, determine the current reading shown on the ammeter.

current reading = A [2]

- (c) Wire XY is replaced with another wire of the same material and length but with a smaller cross-sectional area.

- (i) State and explain the changes, if any, in the balance length.

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 [2]

- (ii) Hence with reference to potential difference, explain the changes, if any, of the final ammeter reading at balance.

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 [1]