

- 5 The variation with potential difference (p.d.)  $V$  of the current  $I$  in a lamp is shown in Fig. 5.1.

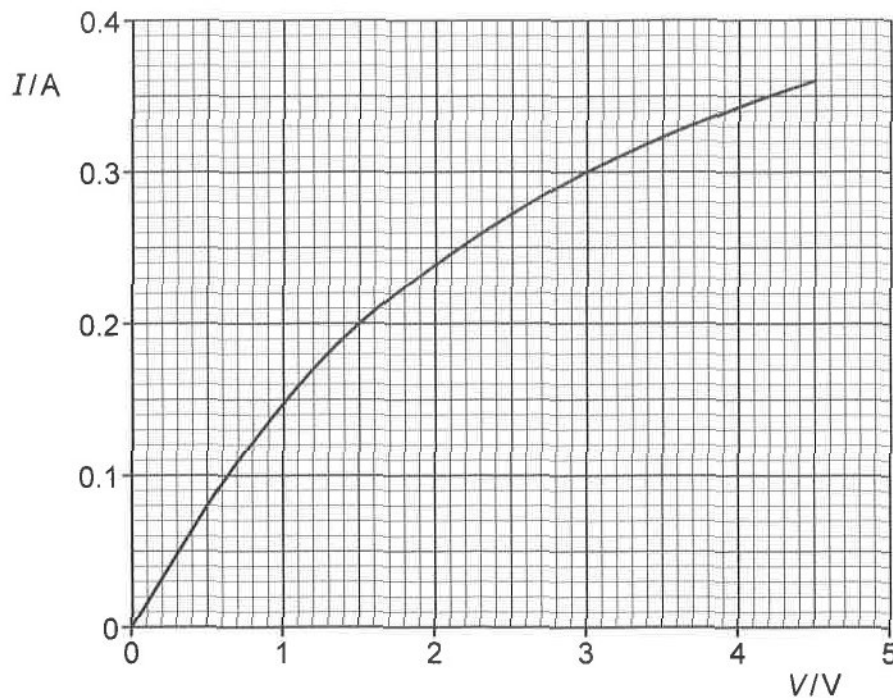


Fig. 5.1

- (a) Calculate the change in resistance of the lamp for a change in p.d. from  $V = 1.5\text{ V}$  to  $V = 3.0\text{ V}$ .

resistance change = .....  $\Omega$  [2]

- (b) The lamp is connected into the circuit shown in Fig. 5.2.

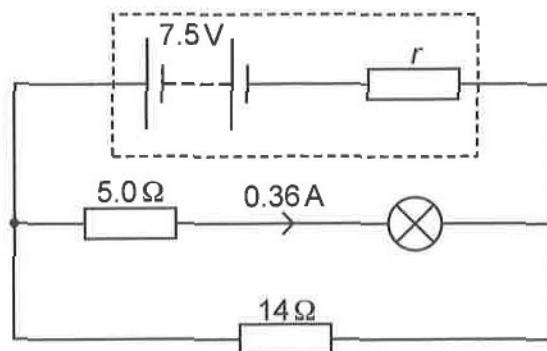


Fig. 5.2



The battery in the circuit has an electromotive force (e.m.f.)  $E$  of 7.5 V and internal resistance  $r$ .

The current in the resistor of resistance  $5.0\ \Omega$  is 0.36 A.

Determine:

(i) the current in the resistor of resistance  $14\ \Omega$

current = ..... A [2]

(ii) the internal resistance  $r$  of the battery.

$r$  = .....  $\Omega$  [2]

[Total: 6]