7 **(a)** Define electric potential difference.

.....

..... [1]

(b) A cell of electromotive force (e.m.f.) 1.8 V and internal resistance *r* is connected in parallel with a resistor of resistance 6.0 Ω and a filament lamp, as shown in Fig. 7.1.

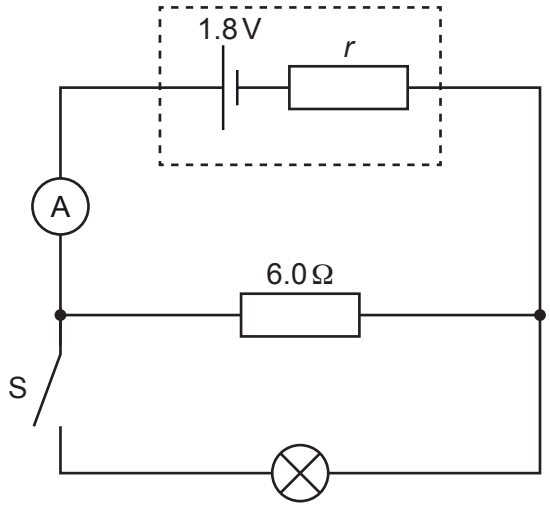

Fig. 7.1

The switch S is open. The ammeter reading is 0.25 A.

Determine the internal resistance *r* of the cell.

r = ... Ω [3]

(c) At time t_1 switch S in Fig. 7.1 is closed. Fig. 7.2 shows the variation with time t of the ammeter reading I.

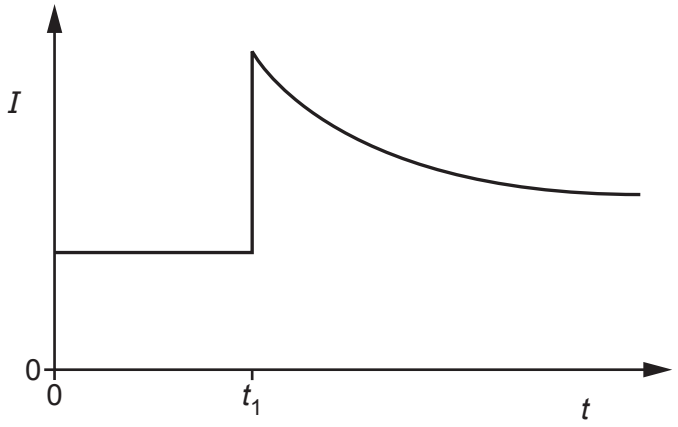

Fig. 7.2

(i) State whether the e.m.f. of the cell after t_1 is greater than, less than or the same as it was before t_1.

..... [1]

(ii) By considering the effect of the lamp on the total resistance of the circuit, explain the variation of the ammeter reading shown in Fig. 7.2.

.....

.....

.....

.....

.....

..... [3]

[Total: 8]