6 **(a)** Distinguish between *electromotive force* (e.m.f.) and *potential difference* (p.d.).

.....

.....

..... [2]

(b) A battery of e.m.f. 12V and internal resistance 0.50Ω is connected to two identical lamps, as shown in Fig. 6.1.

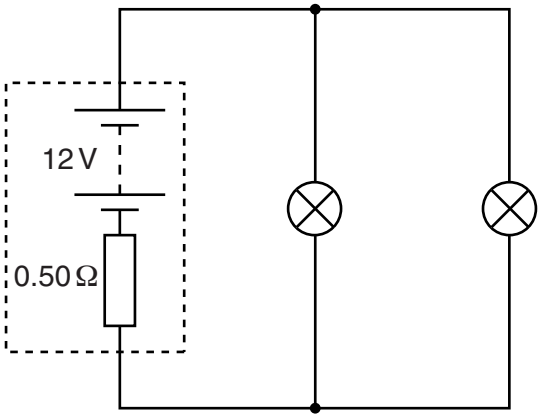

Fig. 6.1

Each lamp has constant resistance. The power rating of each lamp is 48W when connected across a p.d. of 12V.

(i) Explain why the power dissipated in each lamp is not 48W when connected as shown in Fig. 6.1.

.....

.....

..... [1]

(ii) Calculate the resistance of one lamp.

resistance = ... Ω [2]

(iii) Calculate the current in the battery.

current = ... A [2]

(iv) Calculate the power dissipated in one lamp.

power = ... W [2]

(c) A third identical lamp is placed in parallel with the battery in the circuit of Fig. 6.1. Describe and explain the effect on the terminal p.d. of the battery.

.....

.....

.....

..... [2]

Please turn over for Question 7.