Examiner's Use

5 A filament lamp operates normally at a potential difference (p.d.) of 6.0 V. The variation with p.d. V of the current I in the lamp is shown in Fig. 5.1.

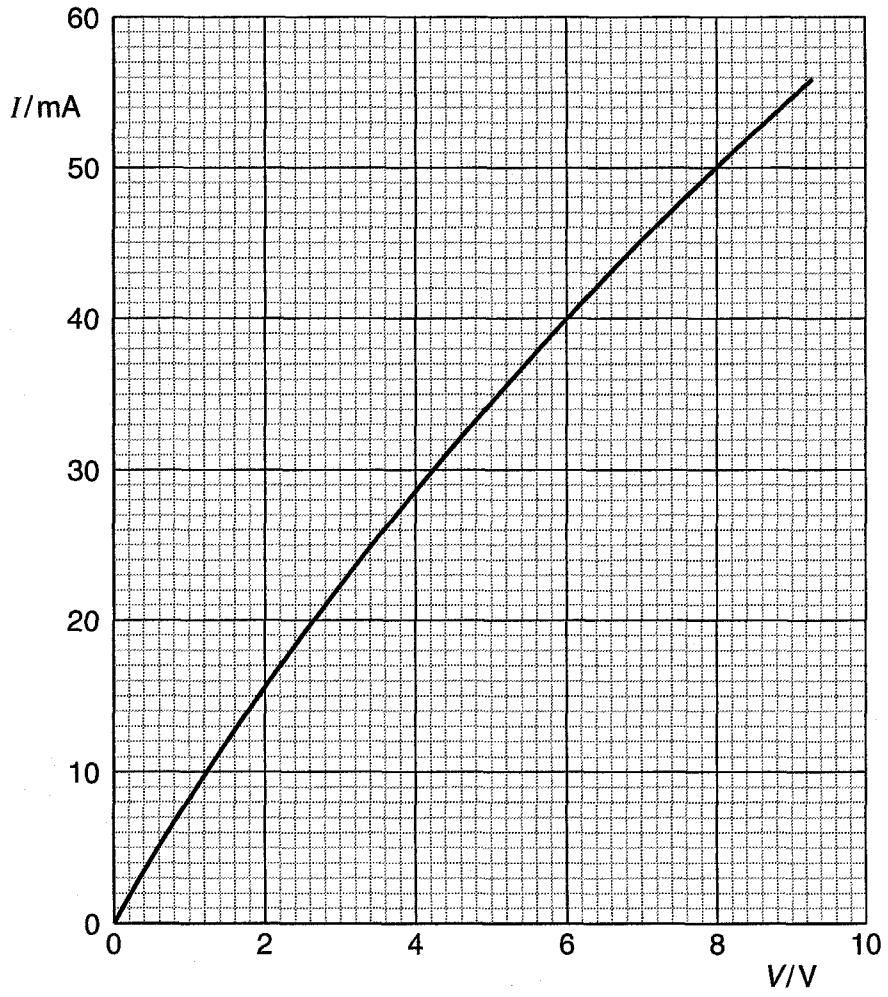

Fig. 5.1

(a) Use Fig. 5.1 to determine, for this lamp,

(i) the resistance when it is operating at a p.d. of 6.0 V,

resistance = ... Ω

(ii) the change in resistance when the p.d. increases from 6.0 V to 8.0 V.

change in resistance = ... Ω
[4]

(b) The lamp is connected into the circuit of Fig. 5.2.

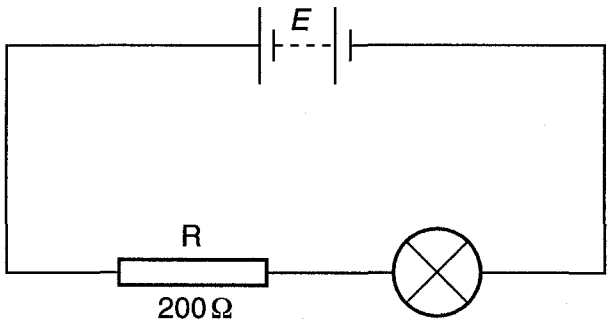

Fig. 5.2

R is a fixed resistor of resistance 200 Ω. The battery has e.m.f. E and negligible internal resistance.

(i) On Fig. 5.1, draw a line to show the variation with p.d. V of the current I in the resistor R.

(ii) Determine the e.m.f. of the battery for the lamp to operate normally.

e.m.f. = ... V
[4]