

- 5 (a) An electron is accelerated from rest in a vacuum through a potential difference of 1.2×10^4 V.
Show that the final speed of the electron is 6.5×10^7 m s⁻¹.

[2]

- (b) The accelerated electron now enters a region of uniform magnetic field acting into the plane of the paper, as illustrated in Fig. 5.1.

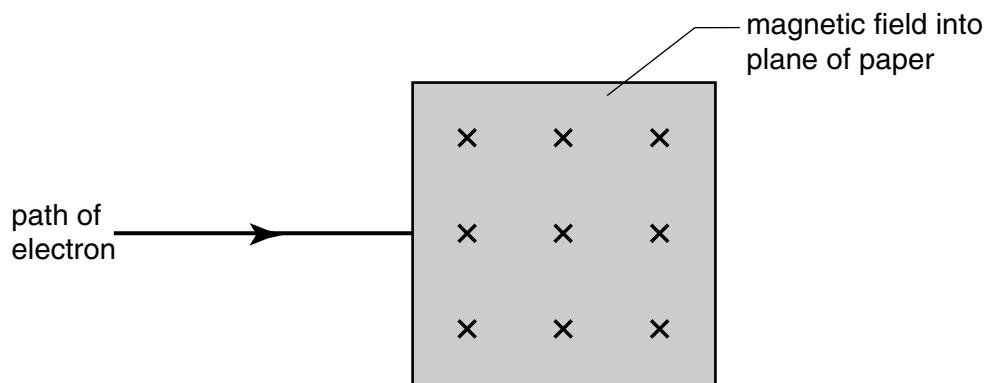


Fig. 5.1

- (i) Describe the path of the electron as it passes through, and beyond, the region of the magnetic field. You may draw on Fig. 5.1 if you wish.

path within field:

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path beyond field:

.....

[3]

- (ii) State and explain the effect on the magnitude of the deflection of the electron in the magnetic field if, separately,

1. the potential difference accelerating the electron is reduced,

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[2]

2. the magnetic field strength is increased.

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[2]