3 Two charged points A and B are separated by a distance of 6.0 cm, as shown in Fig. 3.1.

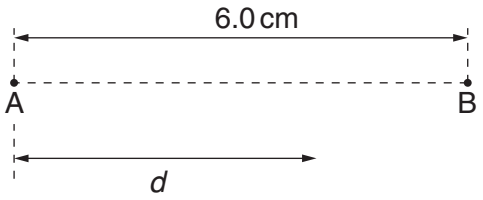

Fig. 3.1

The variation with distance *d* from A of the electric field strength *E* along the line AB is shown in Fig. 3.2.

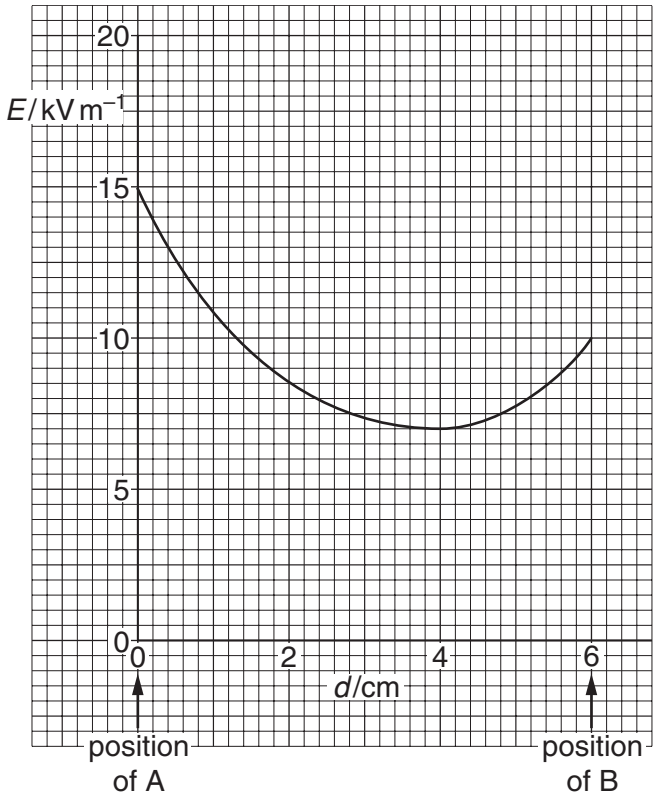

Fig. 3.2

An electron is emitted with negligible speed from A and travels along AB.

(a) State the relation between electric field strength *E* and potential *V*.

.....

..... [2]

(b) The area below the line of the graph of Fig. 3.2 represents the potential difference between A and B.

Use Fig. 3.2 to determine the potential difference between A and B.

potential difference = ... V [4]

(c) Use your answer to **(b)** to calculate the speed of the electron as it reaches point B.

speed = ... $m\,s^{-1}$ [2]

(d) **(i)** Use Fig. 3.2 to determine the value of d at which the electron has maximum acceleration.

d = ... cm [1]

(ii) Without any further calculation, describe the variation with distance d of the acceleration of the electron.

.....

.....

..... [2]