

- 3 (a) (i) Define *electric field strength* at a point.

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..... [1]

- (ii) State the relationship between electric field strength at a point and electric potential at the point.

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..... [1]

- (b) Two point charges A and B are separated by a distance of 7.0 cm in a vacuum, as illustrated in Fig. 3.1.

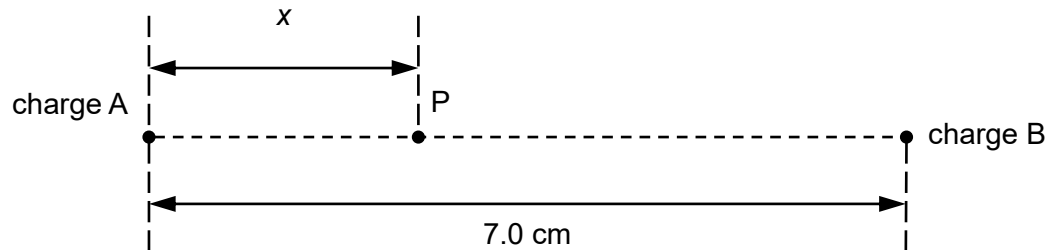


Fig. 3.1

The charge of A is -2.0×10^{-9} C.

A point P lies on the line joining charges A and B. Its distance from charge A is x.

The variation with distance x of the electric potential V at point P is shown in Fig. 3.2.

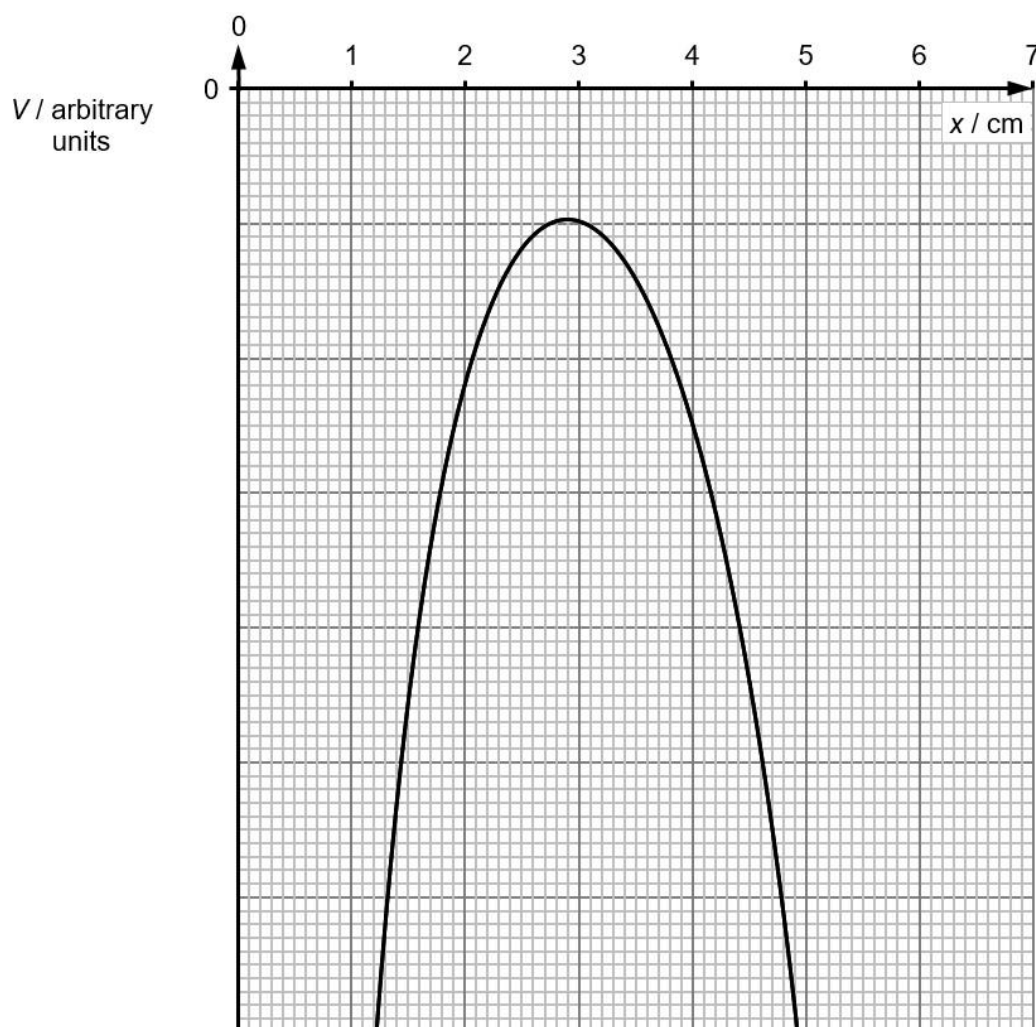


Fig. 3.2

- (i) State the value of x where V is a maximum.

$x = \dots\dots\dots \text{cm}$ [1]

(ii) Hence, determine the charge of B.

charge = C [3]

(iii) An electron is initially at rest at point P where $x = 2.0$ cm.

Describe the subsequent motion of the electron.

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..... [3]

