

- 3 (a) Fig. 3.1 shows an electron moving horizontally with a speed of $1.5 \times 10^7 \text{ m s}^{-1}$ into a pair of horizontal parallel electric plates.

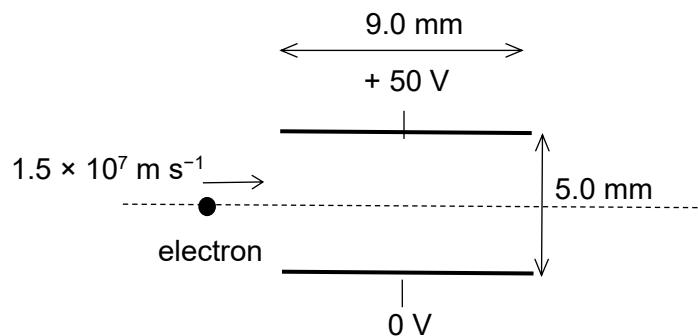


Fig. 3.1

- (i) Describe and explain the subsequent motion of the electron in Fig. 3.1.

[2]

- (ii) Calculate the magnitude of acceleration of the electron when it is between the electric plates.

$$\text{acceleration} = \dots \text{m s}^{-2} \quad [2]$$

- (iii) Calculate the angle which the electron deviates from its initial path, when it leaves the parallel electric plates.

angle = $^{\circ}$ [3]

- (b) Fig. 3.2 shows another electron placed at rest near two positive charges, each of charge $+1.6 \times 10^{-19} \text{ C}$.

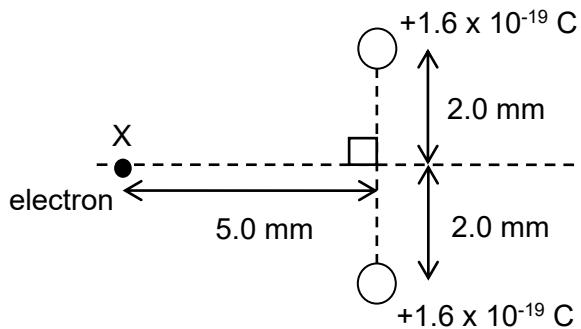


Fig. 3.2

- (i) Describe and explain the subsequent motion of the electron in Fig. 3.2.

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[2]

- (ii) Calculate the magnitude of the resultant electric force acting on the electron when it is placed at position X in Fig. 3.2.

resultant electric force = N [3]