

(a) : Given, $E = 9.1 \times 100 \text{ V/m}$, $v_x = 10^6 \text{ m/s}$

$$l = 10 \text{ cm} = 10 \times 10^{-2} \text{ m}$$

$$q = 1.6 \times 10^{-19} \text{ C}$$

$$m = 9.1 \times 10^{-31} \text{ kg}$$

Let the time be t ;

$$t = \frac{l}{v_x} = \frac{10 \times 10^{-2}}{10^6} = 10^{-7} \text{ s.}$$

$$\text{Now, } a_y = \frac{qE}{m} \text{ or } v_y = u_y + a_y t \text{ or } v_y = 0 + \frac{qE}{m} \times t$$

$$v_y = \frac{1.6 \times 10^{-19} \times 9.1 \times 100}{9.1 \times 10^{-31}} \times 10^{-7} = 16 \times 10^6 \text{ m/s}$$

