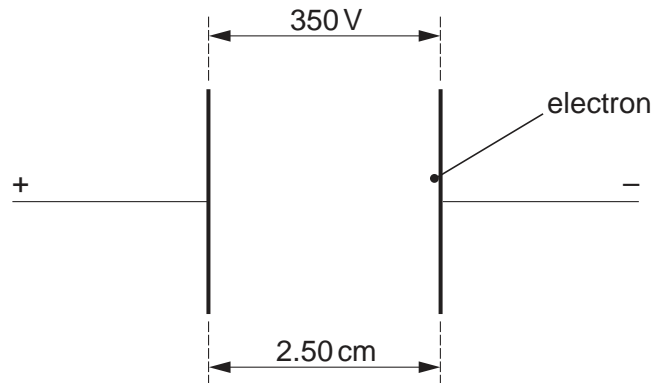


- 6 Two vertical parallel metal plates are situated 2.50 cm apart in a vacuum. The potential difference between the plates is 350 V, as shown in Fig. 6.1.



**Fig. 6.1**

An electron is initially at rest close to the negative plate and in the uniform electric field between the plates.

- (a) (i) Calculate the magnitude of the electric field between the plates.

electric field strength = .....  $\text{NC}^{-1}$  [2]

- (ii) Show that the force on the electron due to the electric field is  $2.24 \times 10^{-15} \text{ N}$ .

[2]

**(b)** The electron accelerates horizontally across the space between the plates. Determine

**(i)** the horizontal acceleration of the electron,

acceleration = .....  $\text{ms}^{-2}$  [2]

**(ii)** the time to travel the horizontal distance of 2.50 cm between the plates.

time = ..... s [2]

**(c)** Explain why gravitational effects on the electron need not be taken into consideration in your calculation in **(b)**.

.....  
.....  
..... [2]