

3 (a) State what is meant by a line of force in

(i) a gravitational field,

.....
 [1]

(ii) an electric field.

.....
 [2]

(b) A charged metal sphere is isolated in space.

State one similarity and one difference between the gravitational force field and the electric force field around the sphere.

similarity:

.....

difference:

.....

..... [3]

(c) Two horizontal metal plates are separated by a distance of 1.8 cm in a vacuum.

A potential difference of 270 V is maintained between the plates, as shown in Fig. 3.1.

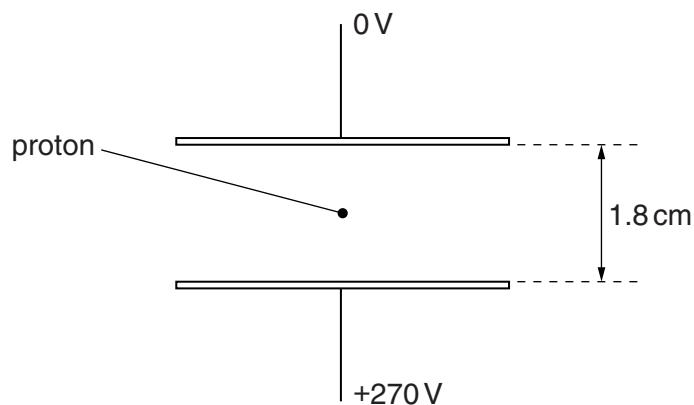


Fig. 3.1

A proton is in the space between the plates.

Explain quantitatively why, when predicting the motion of the proton between the plates, the gravitational field is not taken into consideration.

[4]