

5 (a) (i) State what is meant by a *field of force*.

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

(ii) State **one** similarity and **one** difference between the electric field due to a point charge and the gravitational field due to a point mass.

similarity:
.....
.....
difference:
.....
..... [2]

(b) An isolated solid metal sphere of radius 0.15m is situated in a vacuum, as illustrated in Fig. 5.1.

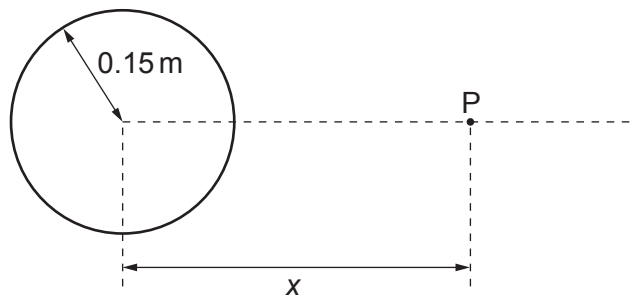


Fig. 5.1

The electric field strength at the surface of the sphere is 84 V m^{-1} .

Determine:

(i) the charge Q on the sphere

$Q = \dots\dots\dots \text{ C}$ [2]

- (ii) the electric field strength at point P, a distance $x = 0.45\text{ m}$ from the centre of the sphere.

electric field strength = V m^{-1} [2]

- (c) Use information from (b) to show, on the axes of Fig. 5.2, the variation of the electric field strength E with distance x from the centre of the sphere for values of x from $x = 0$ to $x = 0.45\text{ m}$.

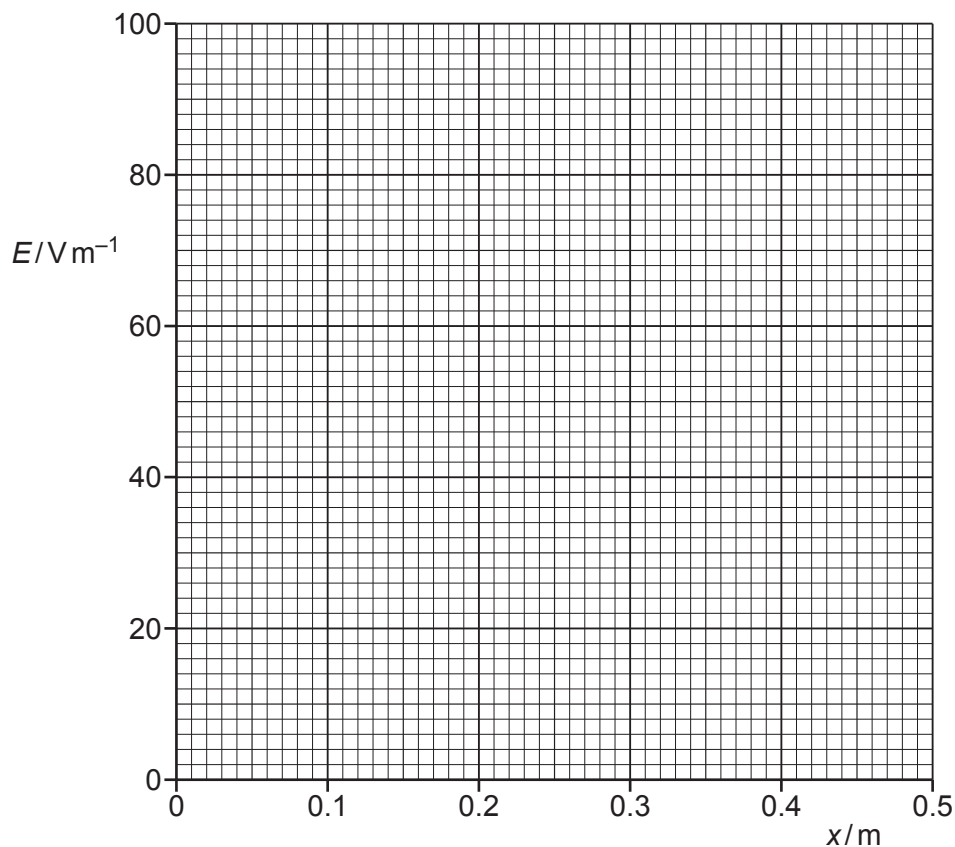


Fig. 5.2