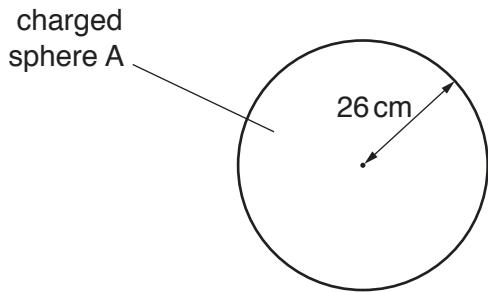


- 6 (a) State what is meant by *electric field strength*.

.....  
..... [1]

- (b) An isolated metal sphere A of radius 26 cm is positively charged. Sphere A is shown in Fig. 6.1.



**Fig. 6.1**

Electrical breakdown (a spark) occurs when the electric field strength at the surface of the sphere exceeds  $2.0 \times 10^4 \text{ V m}^{-1}$ .

Calculate the maximum charge  $Q$  that can be stored on the sphere.

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

- (c) A second isolated metal sphere B, also with charge  $+Q$ , has a radius of 52 cm.

Calculate the additional charge, in terms of  $Q$ , that may be stored on this sphere before electrical breakdown occurs.

$$\text{additional charge} = \dots [2]$$

[Total: 5]