

- 7 (a) Define electric field strength at a point.

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.....

..... [2]

- (b) Fig. 7.1 shows an isolated conducting sphere that has a charge of $-Q$.

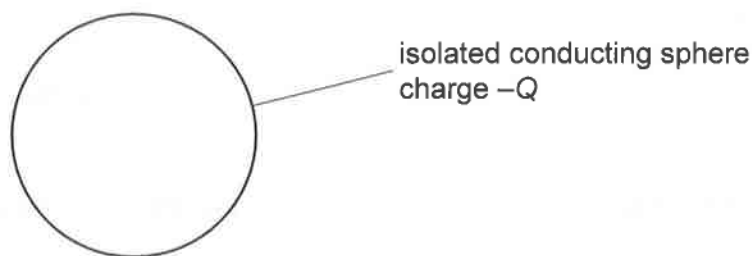


Fig. 7.1

- (i) On Fig. 7.1, draw **eight** field lines to represent the electric field surrounding the sphere. [3]



- (ii) The radius of the sphere is 15 cm. The charge on the sphere may be considered to be a point charge at its centre. The potential gradient at a distance of 40 cm from the surface of the sphere is 130 V m^{-1} .

Calculate the magnitude of the charge Q on the sphere.

Explain your working.

$Q = \dots\dots\dots \text{ C [3]}$

[Total: 8]

