

- 2 (a)** Define *electric field strength* at a point.

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

- (b)** A positively charged conducting sphere P, isolated in space, has a radius R . The electric field strength at the surface of the sphere is E .

- (i) P has a charge of 2.2×10^{-9} C and a diameter of 4.0 cm.

Determine the electric field strength at the surface of the sphere.

electric field strength = N C⁻¹ [2]

- (ii) On Fig. 2.1, sketch a graph to show the variation of the electric field strength of the sphere with distance from its centre until 8.0 cm.

electric field strength / N C⁻¹

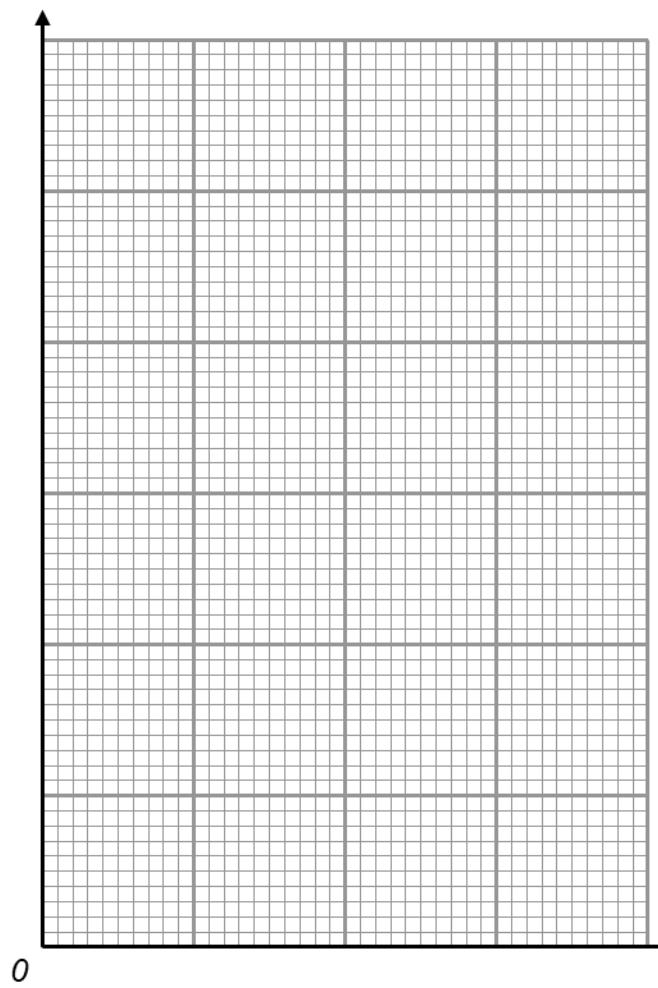


Fig. 2.1

[3]

- (c) Fig. 2.2 shows another positively conducting charged sphere Q, of the same magnitude of charge, placed at a close distance from P.



Fig. 2.2

- (i) On Fig. 2.2, draw electric field lines to represent the electric field around the two spheres.

[2]

- (ii) Explain why the equipotential lines are always perpendicular to the electric field lines.

[2]

[Total: 11]