

2 (a) State Coulomb's law.

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..... [2]

(b) State the relationship between electric field strength and electric potential.

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..... [1]

(c) Fig. 2.1 shows two charged isolated conducting spheres.

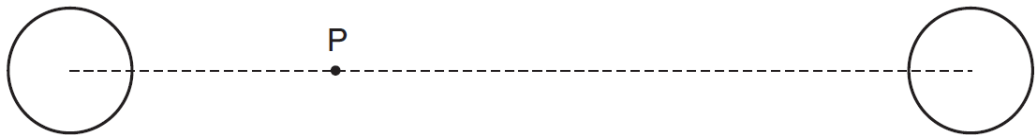


Fig. 2.1

P is a point on the line joining the centres of the spheres.

Explain why it is not possible for the total electric potential and the resultant electric field to simultaneously be zero at point P.

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..... [2]

- (d) A conducting sphere is held midway between two vertical, parallel metal plates in a vacuum, as shown in Fig. 2.2.

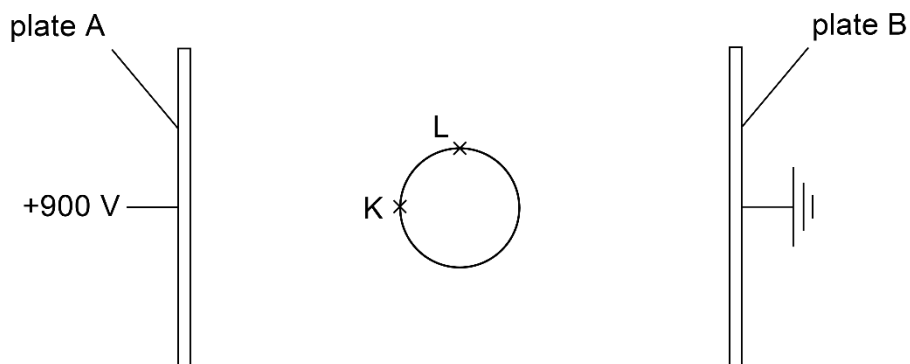


Fig. 2.2

Plate A is at a potential of $+900\text{ V}$ and plate B is earthed.

Points K and L are two points on the surface of the sphere.

- (i) On Fig. 2.2, draw field lines to represent the electric field between the sphere and the two metal plates. [2]

- (ii) Explain why the electric potentials at points K and L are equal.

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..... [2]

- (iii) Determine the electric potential at point K.

electric potential = V [1]