

- 5 (a) Define electric potential at a point.

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- (b) Two isolated charged metal spheres X and Y are near to each other in a vacuum. The centres of the spheres are 1.2 m apart, as shown in Fig. 5.1.

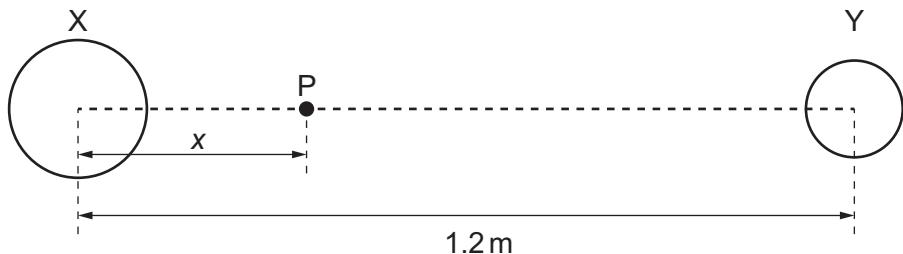


Fig. 5.1 (not to scale)

Point P is on the line joining the centres of spheres X and Y and is at a variable distance x from the centre of X.

Fig. 5.2 shows the variation with x of the total electric potential V due to the two spheres.

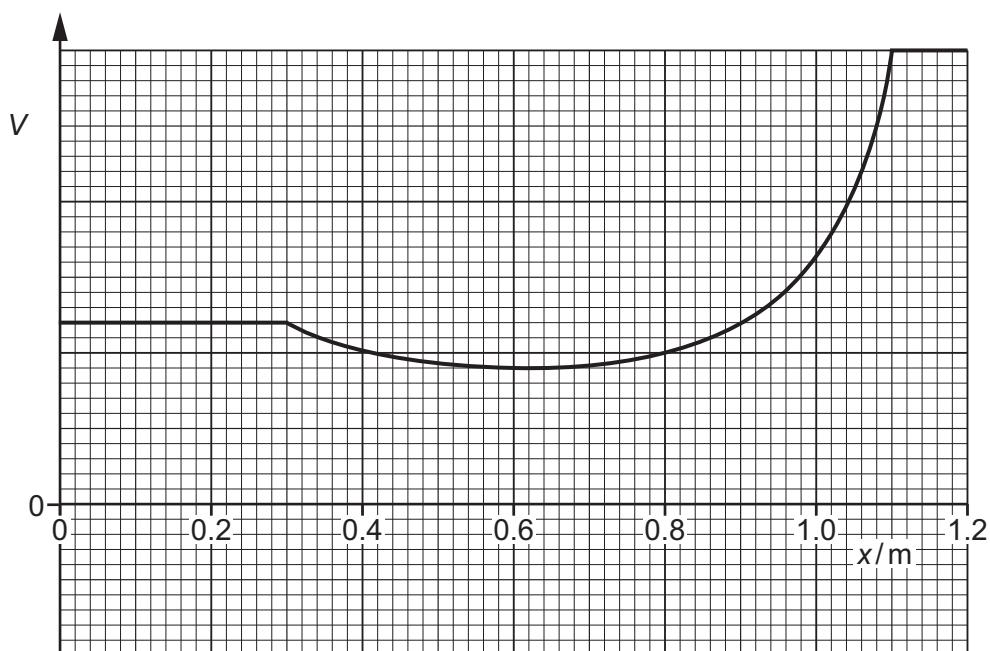


Fig. 5.2



State **three** conclusions that may be drawn about the spheres from Fig. 5.2. The conclusions may be qualitative or quantitative.

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[3]

- (c) A proton is held at rest on the line joining the centres of the spheres in (b) at the position where $x = 0.60\text{ m}$.

The proton is released.

Describe and explain, without calculation, the subsequent motion of the proton.

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[2]