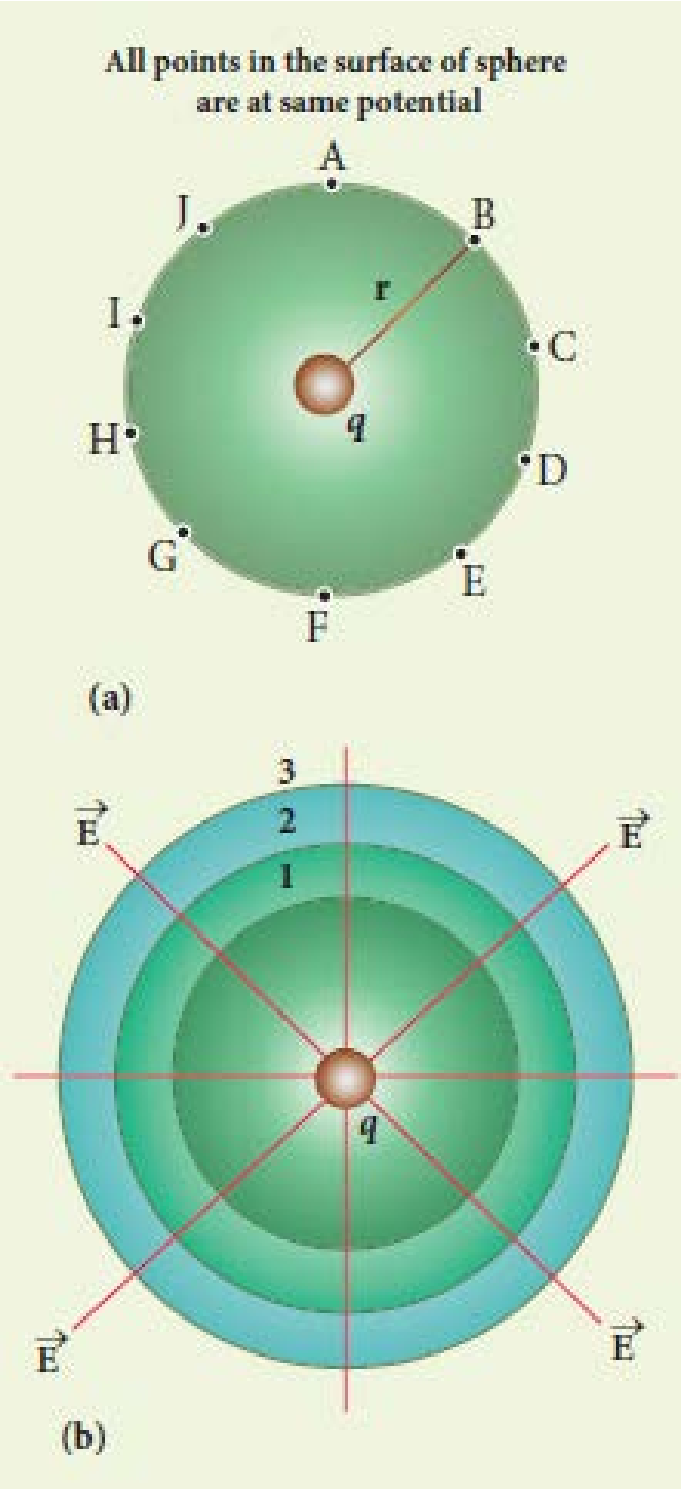
Equi-potential Surface

An equipotential surface is a surface on which all the points are at the same potential. For a point charge the equipotential surfaces are concentric spherical surfaces as shown in Figure.



Properties of equipotential surfaces

- The work done to move a charge q between any two points A and B, W = q (VB – VA). If the points A and B lie on the same equipotential surface, work done is zero because VA = VB.
- The electric field is normal to an equipotential surface. If it is not normal, then there is a component of the field parallel to the surface. Then work must be done to move a charge between two points on the same surface. This is a contradiction. Therefore the electric field must always be normal to equipotential surface.

- Equipotential surface for uniform electric field