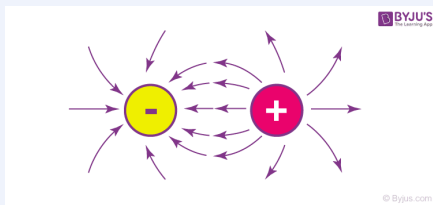


Basic notations

K of vacuum	9×10^9
E	electric field
q	charge
r	distance between 2 charges
a	radius of circle
V	electrical potential due to a point charge
U	electric potential energy

electrostatics



Electric field due to point charge

$$E = Kq/r^2$$

E due to a spherical shell of charge

When point is outside the shell $E = Kq/r^2$

When point is inside the shell $E = 0$

When point is on the surface $E_{\text{max}} = Kq/a^2$

here r is the distance between the centre of the circle and a point outside it

E due to a nonconducting charged sphere

When point is outside the shell $E = Kq/r^2$

When point is inside the shell $E = Kqr/a^3$

When point is on the surface $E_{\text{max}} = Kq/a^2$

here r is the distance between the centre of the circle and a point outside it

Electrical potential due to point charge

$$V = Kq/r$$

V due to conducting charged sphere

When point is outside the shell $V = Kq/r$

when point is inside the shell $V = Kq/a$

when point is on the surface $V = Kq/a$

U of a system of charges

1. 2 point charges -

$$U = Kq_1q_2/r_{12}$$

2. 3 point charges -

$$U = K(q_1q_2/r_{12} + q_2q_3/r_{23} + q_1q_3/r_{13})$$

r_{12} , r_{23} , r_{13} are all distances between the corresponding charges