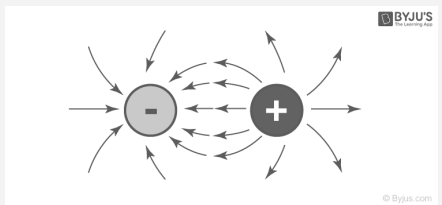


### Basic notations

K of vacuum	$9 \times 10^9$
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

C

By **Taneesha** (Taneesha)  
[cheatography.com/taneesha/](https://cheatography.com/taneesha/)

Published 30th September, 2023.

Last updated 29th September, 2023.

Page 1 of 1.

Sponsored by **Readable.com**

Measure your website readability!

<https://readable.com>