

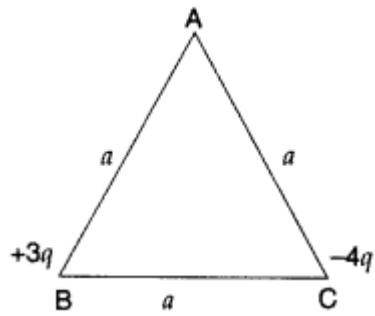
INTERNATIONAL INDIAN SCHOOL BURAIDAH

Worksheet for the Academic Year 2023-24

CLASS:12 SUBJECT: PHYSICS DATE:13-5-2023

LESSON :1 ELECTRIC CHARGES AND FIELDS

1. Which orientation of an electric dipole in a uniform electric field would correspond to stable equilibrium ?
2. If the radius of the Gaussian surface enclosing a charge is halved, how does the electric flux through the Gaussian surface change
3. Why should electrostatic field be zero inside a conductor?
4. Why must electrostatic field be normal to the surface at every point of a charged conductor?
5. A charge 'q' is placed at the centre of a cube of side l. What is the electric flux passing through each face of the cube?
6. State Gauss' law in electrostatics. Using this law derive an expression for the electric field due to a uniformly charged infinite plane sheet.
7. A positive point charge (+ q) is kept in the vicinity of an uncharged conducting plate. Sketch electric field lines originating from the point on to the surface of the plate.  
Derive the expression for the electric field at the surface of a charged conductor.
8. Calculate the flux of the uniform field through a square surface of area  $10 \text{ cm}^2$  when
  - (i) its plane is parallel to the y-z plane, and
  - (ii) the normal to its plane makes a  $60^\circ$  angle with the x-axis.
9. Two charged spherical conductors of radii  $R_1$  and  $R_2$  when connected by a conducting wire acquire charges  $q_1$  and  $q_2$  respectively. Find the ratio of their surface charge densities in terms of their radii.
10. Two point charges + 3q and - 4q are placed at the vertices 'B' and 'C' of an equilateral triangle ABC of side 'a' as given in the figure. Obtain the expression for



- (i) the magnitude and
- (ii) the direction of the resultant electric field at the vertex A due to these two charges.