

NATIONAL ACADEMY FOR LEARNING

REVISION WORKSHEET

MAY 2023

12 ISC – PHYSICS

TOPIC: ELECTROSTATICS

1 MARK

1. State the unit of electric permittivity in terms of the base SI units.
2. If the distance between two equal point charges is doubled and their individual charges are also doubled, what would happen to the force between them?
3. Maximum torque acting on an electric dipole of moment $3 \times 10^{-29} \text{Cm}$ in a uniform Electric field E is $6 \times 10^{-25} \text{Nm}$. Find E . (Ans : $2 \times 10^4 \text{ N/C}$)
4. A stationary oil drop between two parallel plates has a charge of $3.2 \times 10^{-19} \text{C}$ and weight of $1.6 \times 10^{-14} \text{N}$. What is the Electric Field acting on the drop. ($5 \times 10^4 \text{N/C}$).
5. What is a Gaussian Surface? State Gauss's Law.

2 Mark

6. Draw a graph to show showing the variation of electric field, as one moves from the centre of a charged metal ball to a point on its surface and then to a far-off outside point.
7. An infinite line charge produced a field of $9 \times 10^4 \text{N/C}$ at a distance of 2 cm. Calculate the linear charge density. ($1 \times 10^{-7} \text{ C/m}$)
8. Two-point charges $Q_1 = 400 \mu\text{C}$ and $Q_2 = 100 \mu\text{C}$ are kept fixed, 60 cm apart in vacuum. Find the intensity of the electric field at the mid-point of the line joining Q_1 and Q_2 .

9. Obtain an expression for Intensity of Electric Field in **end on** position or axial position of an electric dipole.
10. Four-point charges are placed at the corners of a square of side 2 cm. The charges are in order from the left base corner of the square as we move anti clock wise given as $+2Q$, $-Q$, $+Q$ and $-2Q$. Find the magnitude of the Electric field at the center of the square. ($1.3 \times 10^6 \text{N/C}$)