

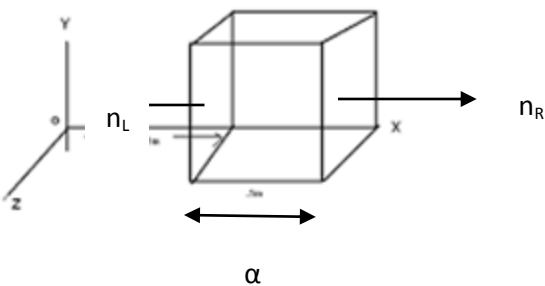
ELECTROSTATICS

ELECTRIC CHARGES AND FIELDS

Test Paper-II

MAX MARKS: 30

TIME: 90Mts

Sl.	QUESTION	ANSWER PAGE	MAR
1	Define Torque. Find the torque acting on an electric dipole placed in a uniform electric field. Give the conditions for torque acting on an electric dipole is (a) zero and (b) maximum	Page:31	3
2	How can you explain a comb run through dry hair attracts pieces of paper?	Page:31	2
3	Define linear charge density. Give its SI unit of measurement. Also give the formula to find the linear charge density.	Page:32	2
4	Define the following. Also give their SI units of measurement? (a) Surface charge density (b) volume charge density.	Page:32	3
5	State & prove Gauss's Law.	Page:33	3
6	Give any four important points regarding Gauss's law.	Page:34	2
7	The electric field components in fig are $E_x = \alpha x^{1/2}$. $E_y = E_z = 0$, in which $\alpha = 800 \text{ N/Cm}^{1/2}$. Calculate (a) the flux through the cube, and (b) the charge within the cube. Assume that $\alpha = 0.1 \text{ m}$.	Page:35	
			3
8	Derive an expression to find the electric field due to an infinitely long thin straight wire using Gauss's Law	Page:37	3
9	Derive an expression to find the electric field due to a uniformly charged infinite plane sheet using Gauss's Law	Page:38	3
10	Derive an expression to find the electric field due to a uniformly charged thin spherical shell using Gauss's Law	Page:39	3
	Two charges $\pm 10 \mu\text{C}$ are placed 5.0 mm apart. Determine the electric field at (a) a point on the axis of the dipole at 15 cm away from the center of the dipole on the axial line and (b) at 15 cm away from the center of the dipole on the equatorial line of the dipole.	Page:30	3