

**KENDRIYA VIDYALAYA PATTOM SHIFT 1
HOLIDAY HOMEWORK
CLASS X11 PHYSICS**

ELECTROSTATICS

- 1 Two charged particles having different magnitudes of charge when placed at a distance 'd' apart experience a force F. These two particles are put in contact and again placed in contact and again placed at the same distance apart. What is the magnitude of interaction between them now?
- 2 A sphere S_1 of radius r_1 encloses a charge Q . If there is another concentric sphere of radius r_2 ($r_2 > r_1$) and there are no additional charges between S_1 and S_2 . Find the ratio of electric flux through S_1 and S_2 .
3. A charge Q is placed at the centre of a cube of side L . What is the electric flux through each face of the cube?
4. Two point charges of $+16\mu\text{C}$ and $-9\mu\text{C}$ are placed 8cm apart in vacuum. Determine the position of the point where the resultant field is zero.
5. An electron moves a distance of 6 cm when accelerated from rest by an electric field of strength $2 \times 10^4 \text{ N/C}$. Calculate the time of travel.
6. Keeping the voltage constant What would be the percentage change in energy stored in a parallel plate capacitor if the separation between the plates is decreased by 10% ?
7. Find the ratio of the potential differences that must be applied across the series and parallel combination of two capacitors C_1 and C_2 with their capacitances in the ratio 1:3 so that energy stored in the two cases become the same.
8. Draw three equipotential surfaces corresponding to a field that uniformly increases in magnitude but remains constant along Z direction. How are these surfaces different from that of a constant electric field?
9. Calculate the voltage needed to balance an oil drop carrying 10 electrons when located between the plates of a capacitor which are 5mm apart. Mass of the oil drop is 3×10^{-6} .
10. Three point charges $-q$, $+Q$, and $-q$ are placed at equal distances on a straight line. If the Potential energy of the system is zero find the ratio Q/q .

NCERT text book questions

2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.13, 2.14, 2.17, 2.27, 2.31, 2.34, 2.35, 2.37