

GGPS CHAS SUBJECT-PHYSICS ASSIGNMENT

CLASS-12

1. How can you charge a metal sphere positively without touching it?
2. How much positive and negative charge is there in a cup of water?
3. Write Coulomb's law in vector form. What is the importance of expressing it in vector form?
4. A charge q is to be divided on two objects. What should be the values of the charges on the two objects so that the force between the objects can be maximum?
5. Two identical metal spheres A and B, each carrying a charge q , repel each other with a force f . Third metallic sphere C of the same size, but uncharged, is successively made to touch the spheres A and B, and then remove away. What is the force of repulsion between A and B?
6. Three point charges $+q$ each are kept at the vertices of an equilateral triangle of side (l) . Determine the magnitude and sign of the charge to be kept at its centroid so that the charges at the vertices remain in equilibrium.
7. Three charges each equal to Q are placed at the three corners of a square of side a . Find the electric field at the fourth corner.
8. A charge is distributed uniformly over a ring of radius (a) . Obtain an expression for the electric intensity at a point on the axis of the Ring. Hence show that for Points at large distances from the ring, it behaves like a point charge.
9. A thin semicircular ring of radius (a) is charged uniformly and the linear charge density. Find the electric field at its centre.
10. Two equal squares of water having equal and similar charges coalesce to form a largest sphere. If no charge is lost, how will the surface densities of electrification change?
11. Derive an expression for the torque on an electric dipole placed in a uniform electric field. Hence define dipole moment.
12. Give the physical significance of electric dipoles.
13. What are electric lines of force? Give their important properties.
14. State and prove Gauss's theorem.
15. A cylinder is placed in a uniform electric field with its Axis parallel to the field. Show that the total electric flux through the cylinder is zero.
16. Apply Gauss's theorem to show that for a spherical shell, the electric field inside the shell Vanishes, whereas outside it, the field is as if all the charge had been concentrated at the centre.
17. 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?
18. A positive point charge $+Q$ is kept in the vicinity of an uncharged conducting plate. Sketch electric field lines originating from the point charge on to the surface of the plate.
19. An electric dipole free to move is placed in a uniform electric field. Explain along with diagram its motion when it is placed, (a) parallel to the field, (b) perpendicular to the field.
20. (a) define electric flux. Write its SI units.

(b) a spherical balloon carries a charge that is uniformly distributed over its surface. As the balloon is blown up and increases in size, how does the total electric flux coming out of the surface change? Give reason?