MULTIPLE CHOICE QUESTIONS

1. When a glass rod is rubbed with silk, it
   (a) gains electrons from silk.
   (b) gives electrons to silk.
   (c) gains protons from silk.
   (d) gives protons to silk.

2. The force between two charges is 120N. If the distance between the two charges is doubled, the force will be
   (a) 30N
   (b) 60N
   (c) 15N
   (d) 40N

3. Twelve charges of charge q are situated at the corners of the 12 sided polygon of side a. What is the net force on the charge Q at the centre
   (a) Zero
   (b) $3qQ/\pi\varepsilon_0 a^2$
   (c) $qQ/\pi\varepsilon_0 a^2$
   (d) None of the above

4. What will be the value of electric field at the centre of the electric dipole : -

   (a) Zero

   (b) Equal to the electric field due to one charge at centre

   (c) Twice the electric field due to one charge at centre

   (d) half the value of electric field due to one charge at centre

5. Two charges of equal magnitudes kept at a distance r exert a force F on each other. If the charges are halved and distance between them is doubled, then the new force acting on each charge is
   (a) F/4
   (b) F/8
   (c) 4F
   (d) F/16

6. The electric field inside a spherical shell of uniform surface charge density is
   (a) zero.

(b) constant, less than zero.
(c) directly proportional to the distance from the centre.
(d) none of these.

7. The electric field intensity at a point situated 4m from a point charge is 200N/C. If the distance is reduced to two meters, the electric field intensity will be
    (a)   400N
    (b)   600N
    (c)   800N
    (d)   1200N

8. Two positive point charge are placed at the distance a apart have sum Q. What values of the charges , coulomb force between them is maximum
(a) $q_1=q_1=Q/2$
(b) $q_1=3Q/4$,$q_2=Q/4$
(c) $q_1=5Q/6$,$q_2=Q/6$
(d) None of the above

9. A cylinder of radius R and length L is placed in a uniform electric field E parallel to the cylinder axis. The total flux for the surface of the cylinder is given by
(a) $2\pi R^2 E$
(b) $\pi R^2 E$
(c) $E/\pi R^2$
(d) Zero

10. Electric field at a point varies as $r°$ for
(a) an electric dipole
(b) a point charge
(c) a plane infinite sheet of charge
(d) a line charge of infinite length

11. A metallic solid sphere of radius R is given the charge Q. Which of the following statement is true then
(a) Electric field at points 0< r < R is zero
(b) Electric field at r>R is given by $Q/4\pi\varepsilon_0 r^2$
(c) Electric field is perpendicular to the surface of the sphere
(d) All of these

12. A point charge (Q) is located at the centre of a cube of edge length a, find the final electric flux over one face of the cube
a. Q/ε_0
b. $Q/6\varepsilon_0$
c. $6Q/\varepsilon_0$
d. none of the above

13. A point charge q is placed at geometrical centre of one of the face of a cube. The total flux through the cubical surface due to charge is
(a) $q/\epsilon 0$
(b) $q/2\epsilon 0$
(c) $2q/\epsilon 0$
(d) 0

14. Two large metal sheets having surface charge density +σ and –σ are kept parallel to each other at a small separation distance d. The electric field at any point in the region between the plates is

(a) σ/ε_0

(b) $\sigma/2\varepsilon_0$

(c) $2\sigma/\varepsilon_0$

(d) $\sigma/4\varepsilon_0$

15. Total electric flux coming out of a unit positive charge kept in air is

(a) ϵ_0

(b)$1/\epsilon_0$

(c) $4\pi\epsilon_0$

(d) $1/4\pi\epsilon_0$