Assignment No 2   **Date of submission: 06-june-2020**

1. A point charge +Q is placed at the centre O of an uncharged hollow spherical conductor of inner radius 'a' and outer radius 'b'. Find the following:

(a) The magnitude and sign of the charge induced on the inner and outer surfaces of the conducting shell.

(b) The magnitude of electric field vector at a distance (i) r=a/2, and (ii) r=2b, from the centre of the shell.

2. What will be the net electric flux due to a dipole system?

3. A circular plane sheet of radius 10 cm is placed in a uniform electric field of 5×10^5 N/C, making an angle of 60^0 with the field. Calculate the electric flux through the sheet.

4. Two charges of magnitudes -2Q and +Q are located at points (a,0) and (4a,0) respectively. What is the electric flux due to these charges through a sphere of radius '3a' with its centre at the origin?

5. What does $q_1+q_2=0$ signify in electrostatics?

6. A small test charge is released at rest at a point in an electrostatics field configuration. Will it travel along the line of force?

7. A point charge placed at any point on the axis of an electric dipole at some large distance experiences a force F. What will be the force acting on the point charge when its distance from the dipole is doubled?

8. The electric field lines of force tend to contract lengthwise and expand laterally. What do they indicate?

9. Calculate the electric field due to infinite long wire with the help of Gauss theorem.

10. An electron moves a distance of 6 cm when accelerated from rest by an electric field of strength 2×10^4 N/C. Calculate the time of travel. The mass and charge of electron are 9×10^{-31} kg and 1.6×10^{-19} C respectively.