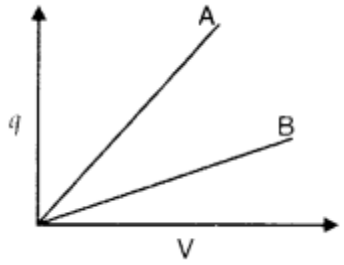
INTERNATIONAL INDIAN SCHOOL BURAIDAH

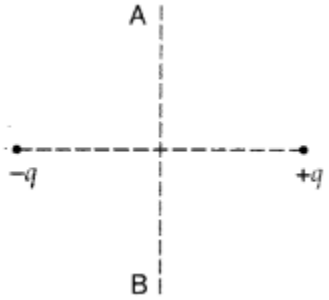
CLASS:XII SUBJECT:PHYSICS

LESSON :ELECTROSTATIC POTENTIAL AND CAPACITANCE

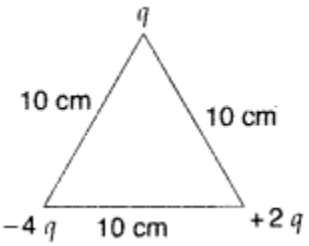
1. Two charges 2μC and – 2μC are placed at points A and B 5 cm apart. Depict an equipotential surface of the system.
2. The given graph shows variation of charge 'q' versus potential difference 'V' for two capacitors C_1 and C_2. Both the capacitors have same plate separation but plate area of C_2 is greater than that of C_1. Which line (A or B) corresponds to C_1 and why?



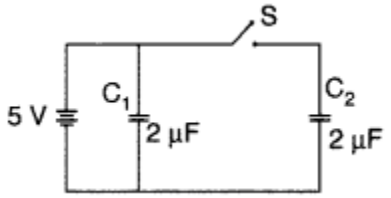
3. A charge 'q' is moved from a point A above a dipole of dipole movement 'p' to a point B below the dipole in equatorial plane without acceleration. Find the work done in the process.



4. Derive the expression for the electric potential at any point along the axial line of an electric dipole
5. Two point charges 20 x 10-6 C and -4 X 10-6 C are separated by a distance of 50 cm in air.
   (i) Find the point on the line joining the charges, where the electric potential is zero.
   (ii) Also find the electrostatic potential energy of the system
6. Calculate the work done to dissociate the system of three charges placed on the vertices of a triangle as shown. (Delhi 2008)



7. Figure shows two identical capacitors C_1 and C_2, each of 2 μF capacitance, connected to a battery of 5 V. Initially switch 'S' is left open and dielectric slabs of dielectric constant K = 5 are inserted to fill completely the space between the plates of the two capacitors. How will the charge and



(ii) potential difference between the plates of the capacitors be affected after the slabs are inserted?

8. Net capacitance of three identical capacitors in series is 1 pF. What will be their net capacitance if connected in parallel?
   Find the ratio of energy stored in the two configurations if they are both connected to the same source
9. Draw a plot showing the variation of
   (i) electric field (E) and
   (ii) electric potential
   (iii) with distance r due to a point charge Q
10. A network of four capacitors, each of capacitance 30 pF, is connected across a battery of 60 V as shown in the figure.
    Find the net capacitance and the energy stored in each capacitor.