PHYSICS TEST SERIES
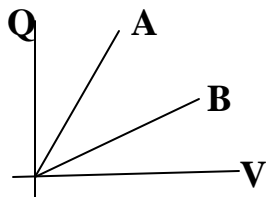
MT-11/4Hr   ELECTROSTAT   MM-30

Q1.Chrge q is placed at the centre of a cube. Find the flux passing through the two opposite faces of the cube.(1)

Q2.Potential on the surface of a thin charge spherical shell is 10V.Find the potential at the centre of the shell.(1)

Q3.   Q   A   **Two capacitors C1 and C2 having equal distance**

            B   **between the plates and area of one is twice of other**

            V   **identify the corresponding graph.(1)**

Q4.Draw the equipotential surfaces for q>0.Are they equidistance ,if not write the reason.(2)

Q5.A capacitor of 4µf is charged by 200V.It is then disconnected from supply and is connected to another uncharged capacitor of 2µf.How much electrostatic energy of the first capacitor is lost in the form of heat and electromagnetic radiation?(2)

Q6.If there is an arc of radius R makes an angle α at its centre having the linear charge density λ. Find the potential at the centre of arc.(2)

Q7.There is an oil drop of radius R in equilibrium between the two plates of the capacitor which are having surface charge densities +σ and −σ respectively and at distance d apart. Density of oil is ρ. Find an expression for excess number of electrons in oil drop.(2)

Q8.A capacitor is charged and then it is disconnected from the source and then distance between its two plates is increased to twice and then a dielectric of constant K is filled between the plates. Find the change in energy stored in the capacitor.(2)

Q9.Find the frequency of oscillations of a dipole of dipole moment p and having rotational inertia I, in a uniform electric field E.(2)

Q10. With necessary derivation prove that the electric field due to a thin line charge is inversely proportional to the distance of observation point from the line charge and is independent of its length.(3)

Q11. Three point charges each of +2μc are placed at the three vertices of an equilateral triangle of which each side is 10cm in length find(3)

(a)electrostatic potential energy of the system.

(b)work done in   keeping them along a straight line, equidistance.

(c)work done in separating the charges.

Q12. 2V——| |—| |—| |——6V

1μF   C
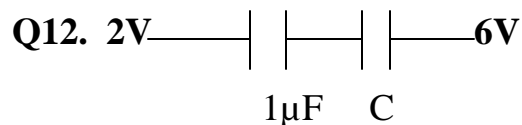
(A)Net capacitance is 2/3μf. Find C.

(B)find the charge across each capacitor.

(C)Find the p.d. across each capacitor.

(D)Find the energy stored.(3)

Q13.Write the principal and working of that machine with the help of which we can produce high electrical potential of the order of 10 million volt.(3)

Q14.(A)Is that necessary at the place where the electric field is zero potential will also be zero.explain.

(B)Why electric lines of force remains perpendicular to equipotential surface?

(C)Find the dipole moment of given system   (3)

q

l 120°

-2q   l   q