TEST SERIES (PHYSICS)

MT1H **ELECTROSTAT** **MM30**

Q1.Two identical balls A and B are having the charges +3e and –e respectively placed at adistance d apart experience the force F.Both the balls are touched and again placed at same distance apart.find the nature and magnitude of new force?(1)

Q2.Charges 2Q and –Q are placed inside the inner and outer spheres S and S' respectively. Find the ratio of electric flux through the given spheres.(1)

Q3.The plate of a charged capacitor are connected by a voltmeter.If the plate of the capacitor are moved further apart,what will be the effect on the reading of voltmeter?(1)

Q4.A hollow sphere is charged up to +Q. Find the work done on placing a charge –q from its surface up to its centre.(1)

Q5.Draw electric lines of force for (a)an electric dipole (b)q1q2>0 (1)

Q6.Moment of an electric dipole is 2×10^{-4}c m.Find the work done in rotating the dipole from position of stable equilibrium to the position of unstable position in a uniform electric field of

10^{-3}N/C.(2)

Q7.Explain why the potential on the surface of conductor remains same all over its surface? What about the potential inside it?(2)

Q8.Three electric charges -1µc,+2µc and +1µc are placed at the three vertices of an equilateral triangle of side 10cm.Find (a) the energy of the system (b) find the workdone in separating the charges.(2)

 Q9.A capacitor is fully charged and battery is disconnected,then distance between its two plates is increased to twice and a dielectric (K=4) completely filled between its two plates,find the change in (a)charge (b)energy(c)potential(d)electric field between its two plates?(2)

Q10.   +q C   ABC is an equilateral triangle .CD is bisector of AB.For which

             nature and magnitude of charge at D charge at C
             will be in equllibrium ?(2)

A+q   D   +q B
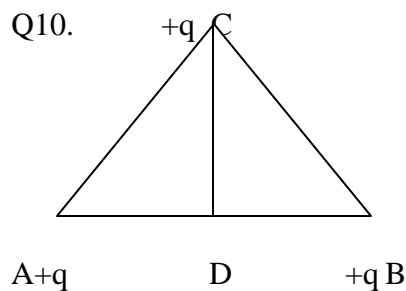
Q11. | K1 | k2 | | k1 |
                    | K2 |

If the given capacitors are identical and theircapacitances

Are equal find the relation between k1 and k2.(2)

Q12.State the principle of a machine that can build up high voltages of the order of few mellion volts. Also explain the construction and working of this machine.(3)

Q13.Would the electric field necessarily zero at a point where the electric potential is zero?Give an example to illustrate your answer.(2)

Q14.Find the expression for the capacitance of a parallel plate capacitor when a dielectric slab of thickness less than the distance between the plates is introduced between the plates. Write the capacitance if a metallic slab of same thick is introduced? In which case the capacitance will be greater?(3)

Q15.Using Gauss law prove that the electric field due to a thin charge sheet remains to be independent of distance of observation point from sheet. (2)

Q16.(A)Consider an uncharged conducting sphere of radius R with its centre at a distance d($>$R) from a point charge Q. What is the potential of the sphere?(1)

(B)A capacitor of 6μf is charged to 100v and connected to an uncharged capacitor 14μf.Calculate ratio of (i)charges on two capacitors (ii)energy stored in the capacitors.(2)