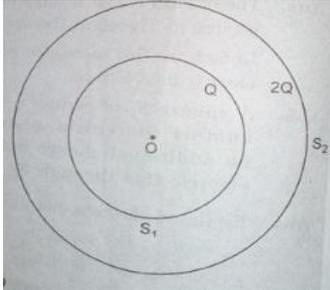
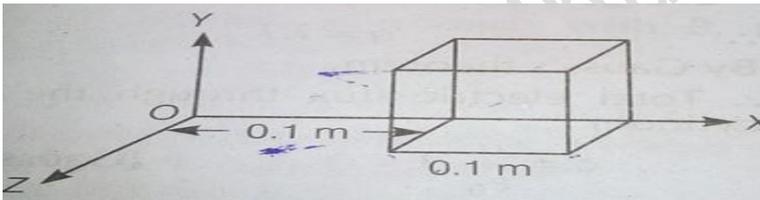


Test class 12th (electrostatics)

1. . Eight capacitors of capacitance 'C' each connected in parallel to a source store a total energy of 64 units. How much energy will be stored if the capacitors are now joined in series to the same source.
2. State Gauss's law . Using this law derive an expression for the electric field due to a (1) uniformly charged infinite charged plane sheet, (2) charged spherical shell, (3) infinite long charged wire of linear charge density λ .
3. S_1 and S_2 are two hollow concentric spheres enclosing charges Q and 2Q respectively as shown in fig. (1) what is the ratio of electric flux through S_1 and S_2 . (2) How will the electric flux through S_1 changes if a medium of dielectric constant 5 is introduced in the space inside S_1 in place of air.

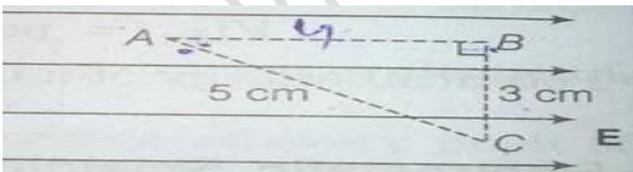


- 4.(1) Define electric flux , write its SI unit . (2) The electric field components due to a charge inside the cube of side 0.1m are shown below $E_x = \alpha x$, where $\alpha = 500 \text{ N/C-m}$ $E_y = 0, E_z = 0$



Calculate (a) The flux through the cube (b) the charge inside the cube

7. A test charge q is moved without acceleration from A to B and then from B to C along the path from A to B and then from B to C in electric field E as shown in fig. (i) calculate the potential difference between A and C . (ii) at which point is the electric potential more and why?



8. A tiny particle of mass $10 \mu\text{g}$ is kept over a large horizontal sheet of charge density $4 \times 10^{-6} \text{ C/m}$. What charge should be given to the particle so that if released it doesn't fall down ?
9. An electric dipole of length 10 cm having charges $6 \times 10^{-3} \text{ C}$, placed at 30° with respect to uniform electric field, experience a torque of magnitude $6\sqrt{3} \text{ Nm}$. Calculate (i) electric field and (ii) potential energy of electric dipole.
10. A $4 \mu\text{F}$ capacitor is charged by a 200 V supply. It is then disconnected from the supply and is connected to another unchanged $2 \mu\text{F}$ capacitor. How much electrostatic energy of the first capacitor is lost in the form of heat and electromagnetic radiation?

physics by Nayan jha 9599219921