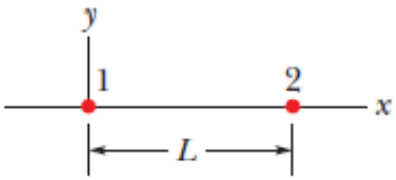
COMSATS University Islamabad, Lahore Campus
Block–B, Department of Electrical and Computer Engineering
COMSATS University Islamabad, Lahore Campus 1.5KM Defence Road, Off Raiwind Road, Lahore

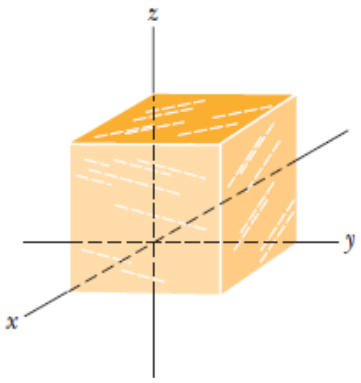
Assignment no. 1 (17/10/2022)

Q1. In Figure, particle 1 of charge +1.0 μC and particle 2 of charge -3.0 μC are held at separation L = 10.0 cm on an x axis. If particle 3 of unknown charge q_3 is to be located such that the net electrostatic force on it from particles 1 and 2 is zero, what must be the (a) x and (b) y coordinates of particle 3?



Q2. How many electrons would have to be removed from a coin to leave it with a charge of +1.0 x 10^{-7} C?

Q3. At each point on the surface of the cube shown in Fig., the electric field is parallel to the z axis. The length of each edge of the cube is 3.0 m. On the top face of the cube the field is E= -34 $\hat{k}$ N/C and on the bottom face it is $\bar{\mathbf{E}}$ = + 20 $\hat{k}$ N/C Determine the net charge contained within the cube.



Q4. A long, straight wire has fixed negative charge with a linear charge density of magnitude 3.6 nC/m. The wire is to be enclosed by a coaxial, thin-walled nonconducting cylindrical shell of radius 1.5 cm. The shell is to have positive charge on its outside surface with a surface charge density s that makes the net external electric field zero. Calculate s**.**

Q5. Two charged concentric spherical shells have radii 10.0 cm and 15.0 cm. The charge on the inner shell is 4.00 x 10^{-8} C, and that on the outer shell is 2.00 x 10^{-8} C. Find the electric field (a) at r = 12.0 cm and (b) at r = 20.0 cm.

(To be submitted: 25-10-2022)