UNIVERSIDAD DE SAN CARLOS
FACULTAD DE INGENIERIA
DEPARTAMENTO DE FISICIA
CURSO DE VACACIONES JUNIO 2022

Firma:

Carné : 201709088 Curso: Física 2 Sección: P

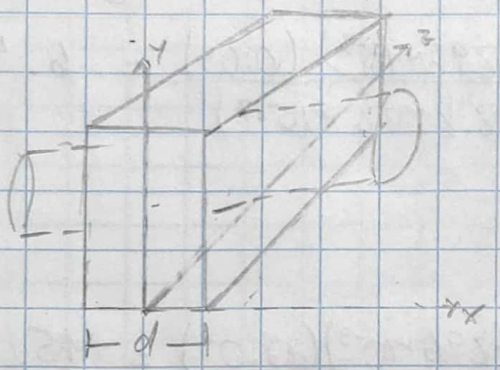
Nombre : Leonel Antonio González García

----------Puede iniciar su examen a partir de aquí ----------

Pregunta 1:

$\rho = 2.5\ nC/m^3$

$d = 0.06\ m.$



1) $d = 0.02\ m$

$q_{enc} = \rho V \qquad E = \frac{Q}{2S\varepsilon_0} \Rightarrow E = \frac{\rho S d}{2S\varepsilon_0} = \frac{\rho d}{2\varepsilon_0}$

$$E = \frac{(2.5\times10^{-9})(0.02)}{2(8.8542\times10^{-12})} = 2.8235\ N/C$$

2) $d = 0.07$

$$E = \frac{(2.5\times10^{-9})(0.07)}{2(8.8542\times10^{-12})} = 9.8823\ N/C$$

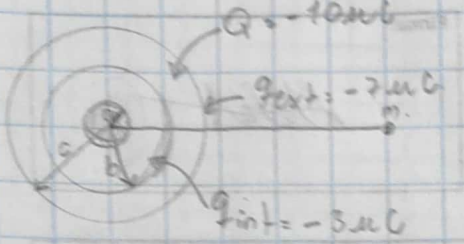
Pregunta 2:

$r_{int} = 0.08m$ Esfera → $R = 0.05m$

$r_{ext} = 0.1m$ $Q_{esf} = +3\mu C$

$Q_r = -10\mu C$

$q_{ext} = -7\mu C$



$q_{int} = Q_r + q_{ext}$

$q_{int} = -10\mu C + (+7\mu C)$

$q_{int} = -3\mu C$

$\rho = \frac{Q}{V} = \frac{3\mu}{\frac{4}{3}\pi R^3}$

$\rho = \frac{3\times10^{-6}}{\frac{4}{3}\pi(0.05)^3} = 5.7296\times10^{-3}$

1) $r = 0.03m$

$E = \frac{\rho r}{3\varepsilon_0} = \frac{(5.7296\times10^{-3})(0.03)}{3(8.8542\times10^{-12})} = 6.47\times10^{6}\ N/C$

2) $r = 0.07m$

$E = \frac{\rho r}{3\varepsilon_0} = \frac{(5.7296\times10^{-3})(0.07)}{3(8.8542\times10^{-12})} = 15.1\times10^{6}\ N/C$

3) $m = 1\times10^{-3}\ kg$

$q = 0.1\mu$

$r = 0.2m$

$E(4\pi r^2) = \frac{-10\mu}{\varepsilon_0}$

$E = \frac{-10\mu}{4\pi r^2 \varepsilon_0} = -2.25\times10^{6}\ N/C$

$F = ma \quad F = E\cdot q$

$ma = Eq$

$a = \frac{(-2.25\times10^{6})(0.1\times10^{-6})}{1\times10^{-3}} = -2.25\times10^{-10}$