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

Firma:

Carné : 201709088 Curso: Física 2. Sección: P

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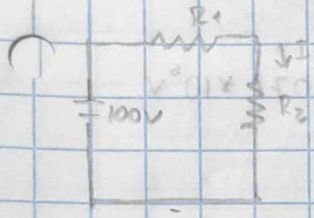
----------Puede iniciar su examen a partir de aquí ----------

Problema 1:



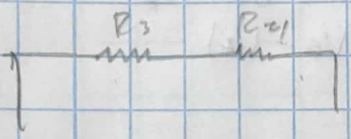
$R_1 = 10\Omega$ $R_{eq} = 10 + 30 = 40\Omega$

$R_2 = 30\Omega$

$V = 100v$ $I_2 = \frac{V}{R_{eq}} = \frac{100}{40} = 2.5\ A.$

$I_2 = I_4$

$I_2 = 0.5\ A.$



$R_{eq} = 10 + 6.$

$R_{eq} = 16\Omega$

$V = (2.5)(16)$ $I_8 = 30\ A$

$V_4 = 40v$ $V_4 = 90v.$

$V_8 = (2.5)(10)$

$V_8 = 25v.$

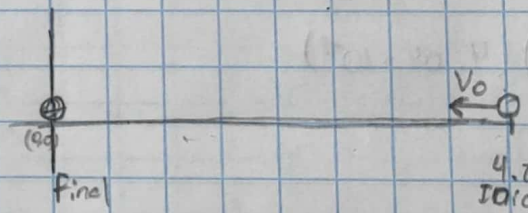
$V_8 = 25v.$

Problema 2:

$q_1 = +4.50\mu C$

$m = 6.00g$ y $q_2 = +3.00\mu C$

$V_o = 60m/s$; $X = 4.20cm$



$E_o = E_f$

$$\frac{Kq_1q_2}{r_o} + \frac{1}{2}m_oV_o^2 = \frac{Kq_1q_2}{r_f} + \frac{1}{2}m_oV_f^2 \to 0$$

$$r_f = \frac{Kq_1q_2}{\frac{Kq_1q_2}{r_o} + \frac{1}{2}m_oV_o^2} = \frac{(9\times10^9)(4.50\mu)(3\mu)}{\frac{(9\times10^9)(4.50\mu)(3\mu)}{0.042} + \frac{1}{2}(6\times10^{-3})(60)^2} = 8.8732\times$$

$r_f = 0.887\ m.$

$$V_o = \frac{kq_2}{r_o} = \frac{(9\times10^9)(4.50\,\mu)(3.00\,\mu)}{0.042} = 2.892857$$

$$V_f = \frac{(9\times10^9)(4.5\,\mu)(3\,\mu)}{8.8732\times10^{-3}\,m} = 13.692918$$

$$V_o = \frac{7.892857}{3\times10^{-6}} = 10.9642\times10^6$$

$$V_f = \frac{13.692918}{4.5\times10^{-6}} = 3.0428\times10^6$$

$$V_{AB} = 0.9642\times10^6 - 3.0428\times10^6 = -2.078600\times10^6\,V$$

$$\therefore V_{AB} = -2.078\times10^6\,V$$

Pregunta 3.

$\sigma = +5.80\,pC/m^2$ $\quad$ a) $q = +1.60\times10^{-19}$ $\quad$ $W = -\Delta U = U_o - U_f$

$V_o = \cancel{0}$ $\quad$ $d = 3.56\,cm$ $\quad$ $W = q(V_B - V_A)$

$$U_o = \cancel{0} \Rightarrow V_{o(A)} = \cancel{0}$$

$$V_{B(f)} = \frac{kq}{d} = \frac{9\times10^9(1.60\times10^{-19})}{0.0356} = 4.04\times10^{-8}$$

$$W = (1.60\times10^{-19})(4.04\times10^{-8})$$