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23 MAY 2017



UNIVERSIDAD DE SAN CARLOS  
FACULTAD DE INGENIERÍA  
DEPARTAMENTO DE FÍSICA  
CURSO DE VACACIONES JUNIO 2022

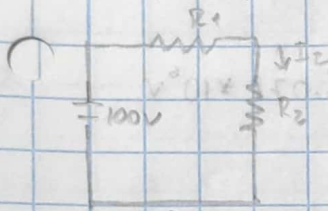
Firma:

*[Handwritten Signature]*

Carné: 2017 09088 Curso: Física 2 Sección: P  
Nombre: Leonel Antonio González García.

Puede iniciar su examen a partir de aquí

Problema 1:



$$R_1 = 10 \Omega$$

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

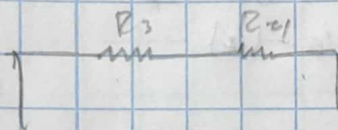
$$R_2 = 30 \Omega$$

$$V = 100V$$

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

$$I_2 = I_4$$

$$I_2 = 2.5 A$$



$$R_{eq} = 10 + 6$$

$$R_{eq} = 16 \Omega$$

$$V = (2.5)(16)$$

$$I_4 = 30 A$$

$$V_4 = 40 V$$

$$V_4 = 90 V$$

$$V_4 = (2.5)(10)$$

$$V_4 = 25 V$$

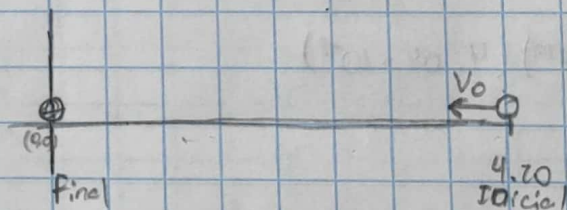
$$V_4 = 25 V$$

Problema 2:

$$q = +4.50 \mu C$$

$$m = 6.00 g \text{ y } q_p = +3.00 \mu C$$

$$V_0 = 60 m/s, \text{ X} = 4.70 cm$$



$$E_0 = E_f$$

$$\frac{k q_1 q_2}{r_0} + \frac{1}{2} m V_0^2 = \frac{k q_1 q_2}{r_f} + \frac{1}{2} m V_f^2$$

$$r_f = \frac{k q_1 q_2}{\frac{k q_1 q_2}{r_0} + \frac{1}{2} m V_0^2} = \frac{(9 \times 10^9)(4.50 \mu)(3 \mu)}{(9 \times 10^9)(4.50 \mu)(3 \mu) + \frac{1}{2} (6 \times 10^{-3})(60)^2} = 8.8732 m$$

$$r_f = 0.887 m$$



$$V_0 = \frac{k q_1 q_2}{r_0} = \frac{(9 \times 10^9)(4.5 \mu\text{C})(3.00 \mu\text{C})}{0.042} = 2.892857$$

$$V_c = \frac{(9 \times 10^9)(4.5 \mu\text{C})(3 \mu\text{C})}{8.8732 \times 10^{-2} \text{ m}} = 13.692918$$

$$V_0 = \frac{2.892857}{3 \times 10^{-6}} = 0.9642 \times 10^6$$

$$V_c = \frac{13.692918}{4.5 \times 10^{-6}} = 3.0428 \times 10^6$$

$$V_{AB} = 0.9642 \times 10^6 - 3.0428 \times 10^6 = -2.078600 \times 10^6 \text{ V}$$

$$: V_{AB} = -2.078 \times 10^6 \text{ V}$$

Pregunta 3.

$$\sigma = +5.80 \text{ pC/m}^2$$

$$a) q = +1.60 \times 10^{-19}$$

$$W = -\Delta U = U_0 - U_f$$

$$V_0 = 0$$

$$d = 3.56 \text{ cm}$$

$$W = q(V_B - V_A)$$

$$U_0 = 0 \Rightarrow V_{0(A)} = 0$$

$$V_B(r) = \frac{k q}{d} = \frac{9 \times 10^9 (1.60 \times 10^{-19})}{0.0356} = 4.04 \times 10^{-8}$$

$$W = (1.60 \times 10^{-19})(4.04 \times 10^{-8})$$