

UNIVERSIDAD CRISTIANA DE LAS ASAMBLEAS DE DIOS



Nombre: Gerson Habacuc Umaña Portillo

Faculta: Ciencias Económicas

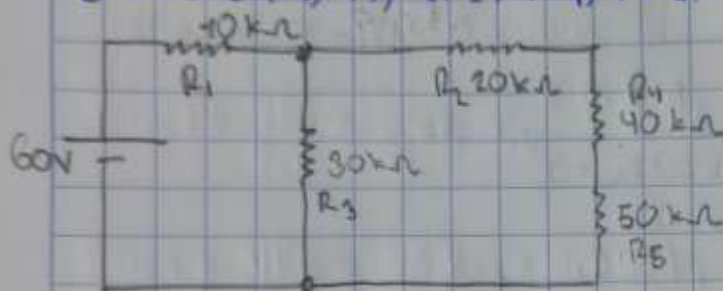
Carrera: Ingeniería en Ciencias de la Computación

Cátedra: Física3, Laboratorio

Catedrático: Ing. Ronald Orellana

Física III

Ejercicios 1

Encuentre R_T , I_T , V_{R_2} , I_{R_3} , P_{R_2} .

$$R_1 = 10\text{ k}\Omega$$

$$R_2 = 20\text{ k}\Omega$$

$$R_3 = 30\text{ k}\Omega$$

$$R_4 = 40\text{ k}\Omega$$

$$R_5 = 50\text{ k}\Omega$$

$$R_T = R_1 + R_{e2} = 33.57\text{ k}\Omega$$

$$R_{e1} = R_2 + R_4 + R_5 = 110\text{ k}\Omega$$

$$R_{e2} = \frac{1}{R_3^{-1} + R_{e1}^{-1}} = 23.57\text{ k}\Omega$$

$$I_T = \frac{V_F}{R_T} = \frac{60\text{ V}}{33.57\text{ k}\Omega} = 1.79\text{ mA}$$

$$V_{R_2} = I_T \times R_{e2} = 1.79\text{ mA} \times 23.57\text{ k}\Omega = 42.2\text{ V}$$

$$I_{R_3} = \frac{V_{R_2}}{R_3} = \frac{42.2\text{ V}}{30\text{ k}\Omega} = 1.407\text{ mA}$$

$$I_{R2} = I_{R4} = I_{R5} = I_T - I_{R3} = 1.79 \text{ mA} - 1.407 \text{ mA} \\ = 0.383 \text{ mA}$$

$$V_{R2} = I_{R2} \times R_2 = 0.383 \text{ mA} \times 20 \text{ k}\Omega = 7.7 \text{ V}$$

$$P_{R2} = V_{R2} \times I_{R2} = 7.7 \text{ V} \times 0.383 \text{ mA} = 2.95 \text{ mW}$$

$$R_{\text{eq}} R_T = 33.57 \text{ k}\Omega$$

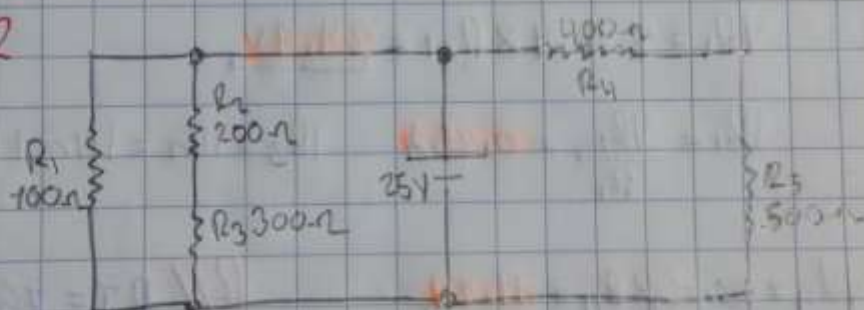
$$I_T = 1.79 \text{ mA}$$

$$V_{R2} = 7.7 \text{ V}$$

$$I_{R4} = 0.383 \text{ mA}$$

$$P_{R2} = 2.95 \text{ mW}$$

Ejercicio 2



$$R_1 = 100 \Omega \quad R_T = \frac{1}{R_{e1}^{-1} + R_{e2}^{-1}} = 76.27 \Omega$$

$$R_2 = 200 \Omega$$

$$R_3 = 300 \Omega$$

$$R_4 = 400 \Omega$$

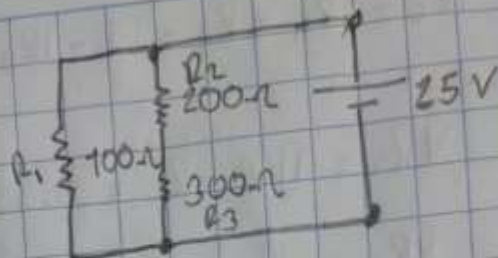
$$R_5 = 500 \Omega$$

$$R_{e1} = \frac{1}{R_1^{-1} + R_2^{-1} + R_3^{-1}} = 83.33 \Omega$$

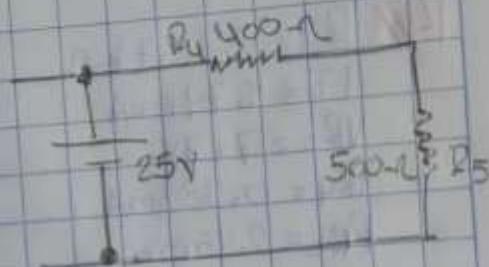
$$R_2 - R_3 = R_2 + R_3 = 500\Omega$$

$$R_{e2} = R_4 + R_5 = 900\Omega$$

$$I_T = \frac{V_F}{R_T} = \frac{25V}{76.27\Omega} = 0.33A$$



$$I_{circ1} = \frac{V_F}{R_{e1}} = \frac{25V}{83.33\Omega} = 0.30A$$



$$I_{circ2} = \frac{V_F}{R_{e2}} = \frac{25V}{900\Omega} = 0.028A$$

$$V_{R1} = I_{circ1} \times R_{e1} = 24.9V$$

$$I_{R1} = \frac{V_{R1}}{R_1} = 0.25A \quad I_{R3} = I_{R2} = I_{circ1} - I_{R1} = 0.05A$$

$$V_{R4} = I_{circ2} \times R_4 = 11.2V$$

$$I_{R4} = \frac{V_{R4}}{R_4} = 0.028A$$

$$P_{R3} = I_{R3}^2 \times R_3 = 0.75W$$

$$R // R_T = 76.27\Omega$$

$$I_T = 0.33A$$

$$V_{R1} = 25V$$

$$I_{R4} = 0.028A$$

$$P_{R3} = 0.75W$$