

PRÁCTICA 14CIRCUITOS DE UTILIZACIÓN EN CORRIENTE ALTERNIA Y POTENCIA

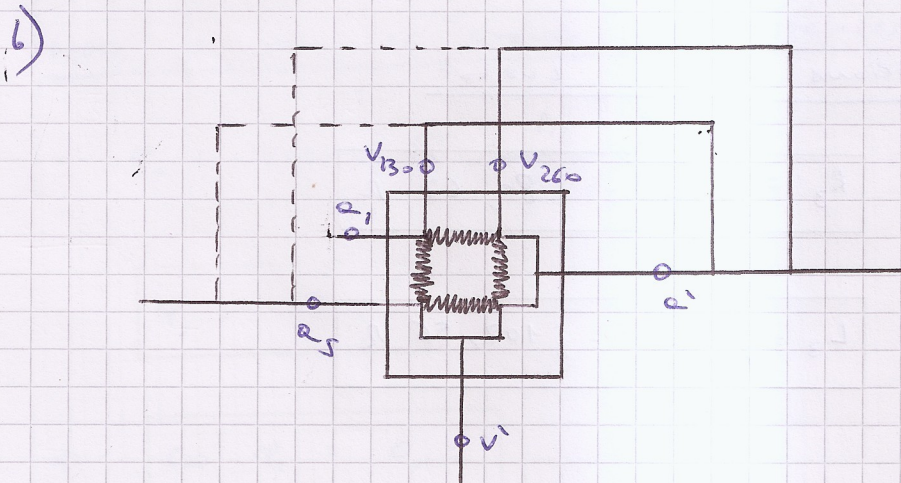
14.4) $\cos \varphi = 0,2$

$$V_{\text{MÁX}} = 120 \text{ V}$$

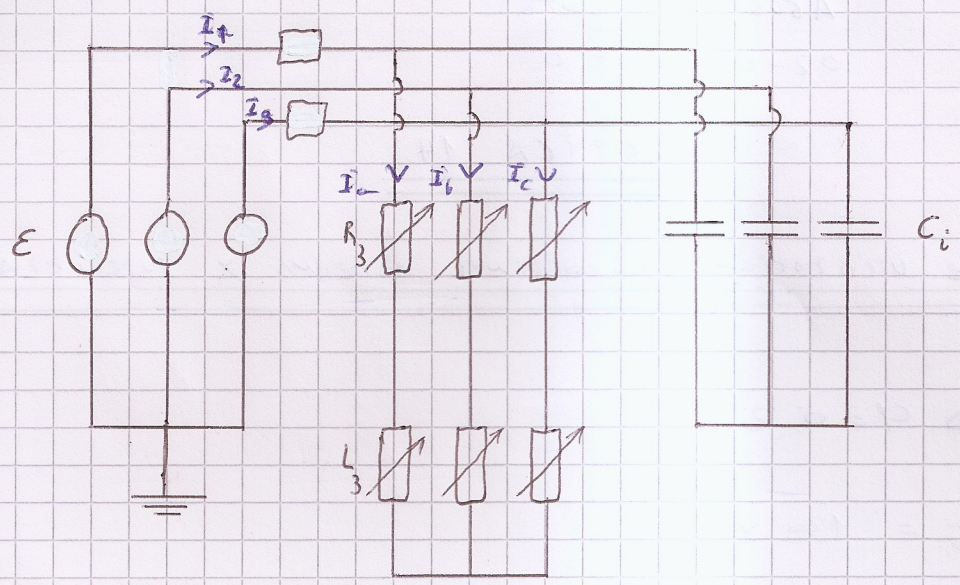
$$I_{\text{MÁX}} = 2,8 \text{ A}$$

$$P_{\text{MÁX}} = 40 \text{ W}$$

a) SE DEBE CONECTAR ENTRE CUALQUIERA DE LOS TERMINALES VOLTIMÉTRICOS Y ENTRE LOS TERMINALES DE 5 A.



14.5)



$E = 220 \text{ V}$

ENTRANCES:

$$\bar{V}_{12} = \bar{V}_1 - \bar{V}_2 = 380 e^{j30^\circ} \text{ V}$$

$$\bar{V}_{32} = \bar{V}_3 - \bar{V}_2 = 380 e^{-j30^\circ} \text{ V}$$

ADONS , COMO SE POSICIONA "C" = 3 , LU665

$$P_i = 600 \text{ W} \Rightarrow R_3 = \frac{V^2}{P_i} = 80,67 \Omega$$

$$Q_{Li} = j450 \text{ VA} \Rightarrow L_3 = \frac{V^2}{Q_{Li}} = j107,56 \Omega$$

LU660:

$$\bar{I}_2 R_3 + \bar{I}_2 L_3 = 220 e^{j30^\circ} \text{ V}$$

$$\bar{I}_2 = \frac{220 e^{j30^\circ} \text{ V}}{(80,67 + j107,56) \Omega} = \frac{220 e^{j30^\circ} \text{ V}}{134,4 e^{j53,1^\circ} \Omega}$$

$$\bar{I}_2 = 1,637 e^{-j53,1^\circ} \text{ A}$$

DE LA MISMA FORMA:

$$\bar{I}_c = 1,637 e^{j 66,7^\circ} \text{ A}$$

ENTONCES, P_{12} Y P_{32} SON:

$$P_{12} = 622,06 e^{j 83,1^\circ} \Rightarrow \text{PARTE REAL} = 74,7 \text{ W}$$

$$P_{32} = 622,06 e^{j 23,1^\circ} \Rightarrow \text{PARTE REAL} = 572,2 \text{ W}$$

$$\Rightarrow P_{\text{TOTAL}} = 74,7 \text{ W} + 572,2 \text{ W}$$

$$P_{\text{TOTAL}} = 646,9 \text{ W}$$

USO, EL FACTOR DE POTENCIA PUEDE OBTENERSE A PARTIR DE:

$$\phi_1 = \arctan \left(\sqrt{3} \frac{P_{12} - P_{32}}{P_{12} + P_{32}} \right)$$

$$\phi_1 = 53,13^\circ$$

$$\cos \phi_1 = 0,6$$

ADOMÁS:

$$S_{\text{TOTAL}} = 1078 \text{ VA} \Rightarrow U_{\text{TOTAL}} = 1078 \cdot \sin \phi_1 \text{ VAR}$$

$$U_{\text{TOTAL}} = 862,4 \text{ VAR}$$

LU66, PMS CORRIGER $\cos \phi_2 = 0,85 \Rightarrow \phi_2 = 31,78^\circ$

ENTRÉE CÔTÉ :

$$S_{\text{entr}} = \frac{P_{\text{act}}}{0,85} = \frac{646,7}{0,85} \text{ VA}$$

$$S_{\text{entr}} = 761 \text{ VA}$$

$$\Rightarrow P_{\text{act}} = 761 \cdot \cos(31,78^\circ) \text{ VA}$$

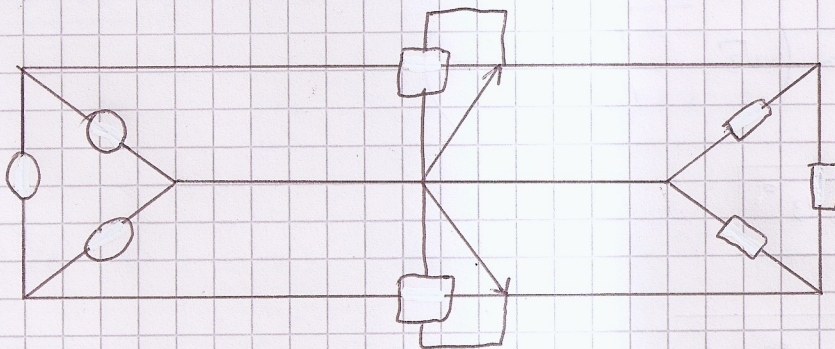
$$P_{\text{act}} = 400,8 \text{ VA}$$

FINALEMENT :

$$U = U_L + U_C$$

$$U_C = -461,6 \text{ VA} \Rightarrow \text{sur 645 POWER } i_C = 3$$

14.7)



$$\begin{cases} \vec{E}_a = 380 e^{j0^\circ} \text{ V} \\ \vec{E}_b = 380 e^{-j120^\circ} \text{ V} \\ \vec{E}_c = 380 e^{j120^\circ} \text{ V} \end{cases}$$

DATOS:

$$S_p = 187,5 e^{j 36,87} \text{ KVA}$$

$$TENDRÁ \Rightarrow 380 \text{ V} \Rightarrow f = 50 \text{ Hz}$$

$$P_{\text{MAX}} = 990 \text{ KVA}$$

$$\cos \phi = 1$$

LVSG:

$$\bar{S}_p = \bar{V}_p \cdot \bar{I}_p^*$$

$$\bar{I}_p^* = \frac{\bar{S}_p}{\bar{V}_p}$$

$$\Rightarrow \begin{cases} \bar{I}_{ac} = 493,42 e^{-j 36,87^\circ} \\ \bar{I}_{bc} = 493,42 e^{-j 156,87^\circ} \\ \bar{I}_{cb} = 493,42 e^{j 83,13^\circ} \end{cases}$$

LVSG:

$$\bar{I}_a = \bar{I}_{ac} - \bar{I}_{bc} = 854,32 e^{-j 6,95^\circ}$$

$$\bar{I}_b = \bar{I}_{cb} - \bar{I}_{ac} = 854,32 e^{j 113,13^\circ}$$

Finalmente:

$$P_1 = 127,53 \text{ Kw}$$

$$P_2 = 322,3 \text{ Kw}$$