TS 12

HOJA N° 1

FECHA

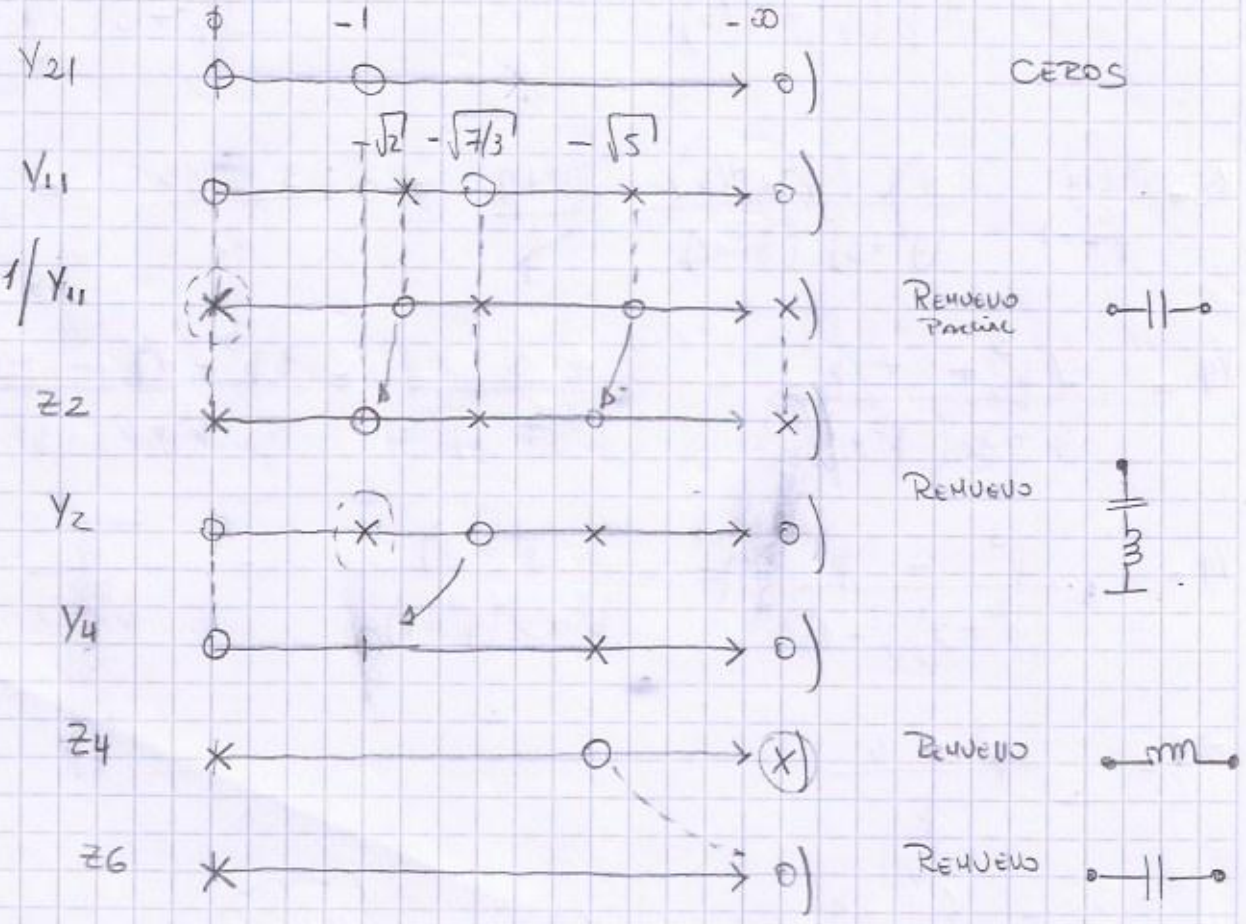
TAREA SEMANAL #12

EJERCICIO #1

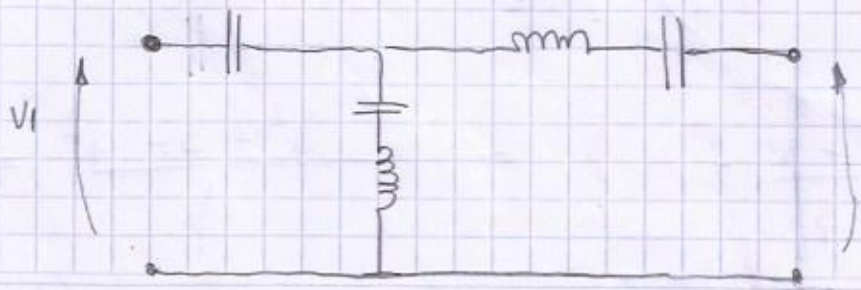
$$Y_{11} = \frac{I_1}{V_1}\bigg|_{V_2=\phi} = \frac{3\$(\$^2+7/3)}{(\$^2+2)(\$^2+5)} \qquad Y_{21} = \frac{\$(\$^2+1)}{(\$^2+2)(\$^2+5)}$$

TRANSFERENCIA DE TIPO $\frac{I_2}{I_1}\Big|_{V_2=\phi}$ → ULTIMO CON POLOS EN SERIE

a)



TOPOLOGÍA



NOTA

b) $\left[\frac{(s^2+2)(s^2+5)}{3s(s^2+7/3)} - \frac{K_1}{s} \right] \Big|_{s^2=-1} = 0$

$K_1 = \frac{1 \cdot 4}{3 \cdot 4/3} \Rightarrow \boxed{K_1 = 1}$

$z_2 = \frac{s^4+7s^2+10}{3s(s^2+7/3)} - \frac{1}{s} = \frac{s^4+7s^2+10-3s^2-7}{3s(s^2+7/3)}$

$z_2 = \frac{s^4+4s^2+3}{3s(s^2+7/3)} \rightarrow y_2 = \frac{3s(s^2+7/3)}{(s^2+3)(s^2+1)}$

$K_2 = \lim_{s^2 \to -1} \frac{3s(s^2+7/3)}{(s^2+3)(s^2+1)} \cdot \frac{(s^2+1)}{s} = \frac{3 \cdot 4/3}{2} = \boxed{2 = K_2}$

$y_4 = \frac{3s^3+7s}{(s^2+3)(s^2+1)} - \frac{2s}{(s^2+1)} = \frac{3s^3+7s-2s^3-6s}{(s^2+3)(s^2+1)}$

$y_4 = \frac{s^3+s}{(s^2+3)(s^2+1)} = \frac{s(s^2+1)}{(s^2+3)(s^2+1)} = \frac{s}{s^2+3}$

$z_4 = \frac{s^2+3}{s}$

$K_3 = \lim_{s \to \infty} \frac{s^2+3}{s} \cdot \frac{1}{s} \rightarrow \boxed{K_3 = 1}$

$z_6 = \frac{s^2+3}{s} - s = \frac{s^2+3-s^2}{s} = \frac{3}{s}$

ULTIMO CAPACITOR

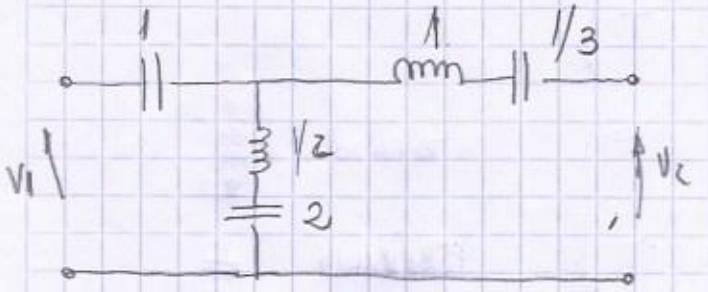
$\boxed{K_4 = 1/3}$

TSIZ

HOJA N° 2

FECHA

- TOPOLOGÍA CON VALORES



$K_2 = 3$

$$\frac{2\$}{\$^2+1}$$

$$\frac{1}{\frac{\$}{2}+\frac{1}{2\$}}$$

INDUCTOR CAPACITOR SERIE (ADMITANCIA)

EJERCICIO #2

$$T(\$) = \left.\frac{V_2}{V_1}\right|_{I_2=\phi} = \frac{K\cdot(\$+1)}{(\$+2)(\$+4)} = \frac{P}{\Phi} = \frac{P|D}{\Phi|D}$$

$$\Phi|D = Z_{11} = Y_{22} \quad \begin{cases} Z_{2C} \\ Y_{2C} \end{cases}$$

- PROPONGO POLINOMIOS D

$$Z_{11} = \frac{(\$+2)(\$+4)}{(\$+1)(\$+3)}$$

$$Y_{22} = \frac{(\$+2)(\$+4)}{(\$+3)}$$

$$Gr\{P\} \leq Gr\{\Phi\}$$

$$Gr\{P\} \geq Gr\{\Phi\}$$

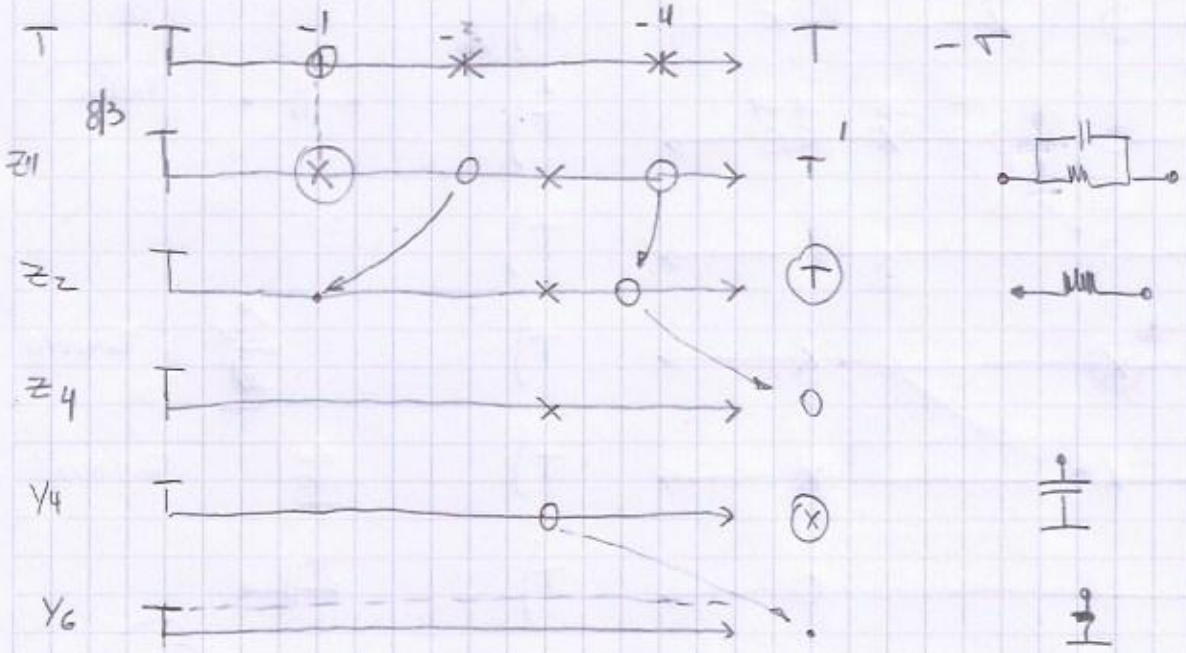
- CONSIDERACIÓN

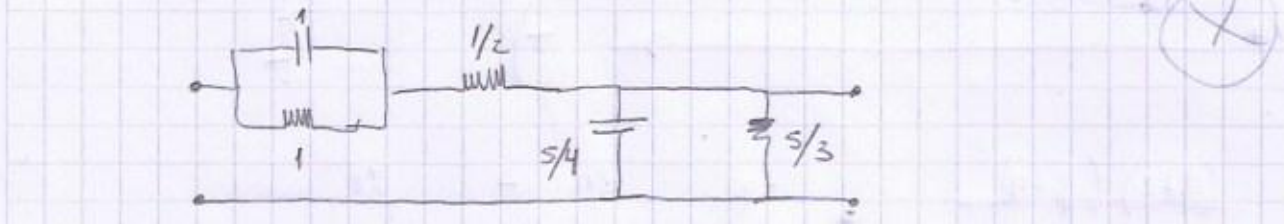
PRIMER COMPONENTE SERIE

ÚLTIMO COMPONENTE PARALELO

NOTA

$$Z_{11} = \frac{(s+2)(s+4)}{(s+1)(s+3)} \qquad T = \frac{K(s+1)}{(s+2)(s+4)}$$





VALORES

$8 + 6s + s^2$ $\quad 3 + 4s + s^2$

$s^2 + 6s + 8$ $\quad s^2 + 4s + 3$

$-\ s^2 + 4s + 3$ $\quad 1$

$2s + 3$

$s^2 + 4s + 3$ $\quad 2s + 3$

$-\ s^2 + 3/2\, s$ $\quad 1/2\, s$

$5/2\, s + 3$

$2s + 3$ $\quad 5/2\, s + 3$

$2s + 1c/s$ $\quad 4/5$

$3/5$

NOTA

HOJA N°

FECHA

$$z_2 = \frac{s^2+6s+8}{(s+1)(s+3)} - \frac{K_1}{s+1}$$

$$K_1 = \lim_{s \to -1} \frac{s^2+6s+8}{(s+3)} = \frac{1-6+8}{2} = \frac{3}{2}$$

$$\frac{3/2}{s+1}$$

$$\frac{s2}{3} + + \frac{2}{3}$$

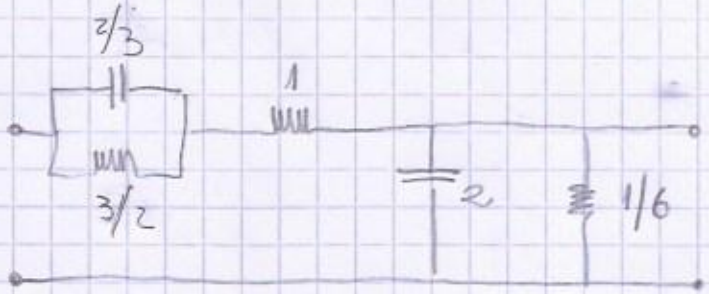
$$z_2 = \frac{s^2+6s+8}{(s+1)(s+3)} - \frac{3/2}{s+1} = \frac{s^2+6s+8-3/2\,s-9/2}{(s+1)(s+3)} = \frac{s^2+9/2+7/2}{(s+1)(s+3)}$$

$$z_4 = \frac{s^2+9/2+7/2}{(s+1)(s+3)} - z_1$$

$$R_1 = z_2\Big|_{s=\infty} = 1 \rightarrow \frac{s^2+9/2+7/2}{(s+1)(s+3)} - 1 = \frac{s^2+9/2+7/2-s^2-4s-3}{(s+1)(s+3)}$$

$$z_4 = \frac{1/2\,s+1/2}{(s+1)(s+3)} = \frac{s+1}{2(s+1)(s+3)} = Y_4 = 2(s+3)$$

$$Y_4 = 2s + 6$$



EN (0) = 8/3

NOTA

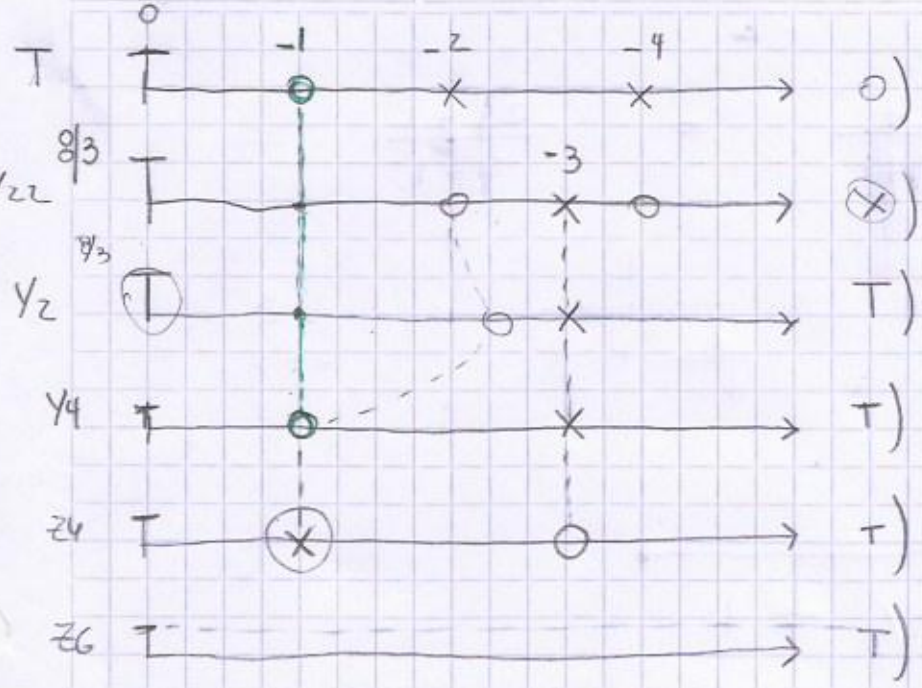
TS12

HOJA N° 9

FECHA

Y_{22}

Y_2 ⊣ Y_{22}



Remuevo C

Remuevo Parcial R

Remuevo C en paralelo con R

Remuevo R

(Síntesis)

$$Y_{22} = \frac{(s+2)(s+4)}{(s+3)}$$

$$K_1 = \lim_{s \to \infty} \frac{(s+2)(s+4)}{s(s+3)} = 1 \rightarrow \boxed{K_1 = 1}$$

$$Y_2 = \frac{s^2+6s+8}{s+3} - s = \frac{s^2+6s+8-s^2-3s}{s+3}$$

$$Y_2 = \frac{3s+8}{s+3}$$

$$K_2 = \frac{-3+8}{-1+3} = 5/2 \rightarrow \boxed{K_2 = 5/2}$$

$$Y_4 = \frac{3s+8}{s+3} - \frac{5}{2} = \frac{6s+16-5s-15}{(s+3)\cdot 2} = \frac{s+1}{2(s+3)}$$

$$Y_4 = \frac{s+1}{2(s+3)} \rightarrow Z_4 = \frac{2s+6}{s+1}$$

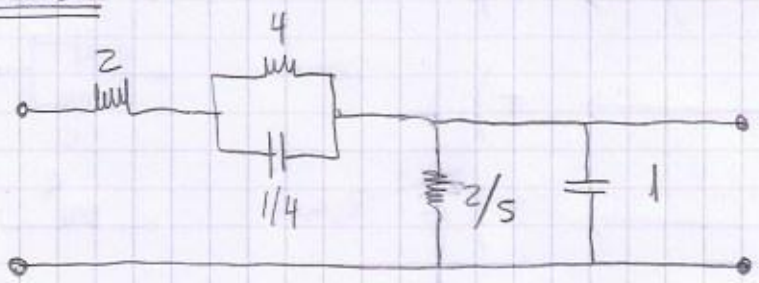
NOTA

$K_3 = \lim_{s \to -1} \frac{2s+6}{s} \Rightarrow$ $K_3 = 4$

$Z_6 = \frac{2s+6}{s+1} - \frac{4}{s+1} = \frac{2s+2}{s+1}$

$K_4 = 2$

TOPOLOGÍA



VALOR DE K

$T(s)\Big|_{s \to 0}$ =

$= \frac{32}{5}$

$T(0) = \frac{K(0+1)}{(0+2)(0+4)} = \frac{K}{6}$

$\frac{K}{6} = \frac{32}{5} \Rightarrow \boxed{\frac{192}{5} = K}$

NOTA