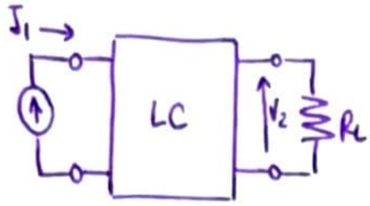
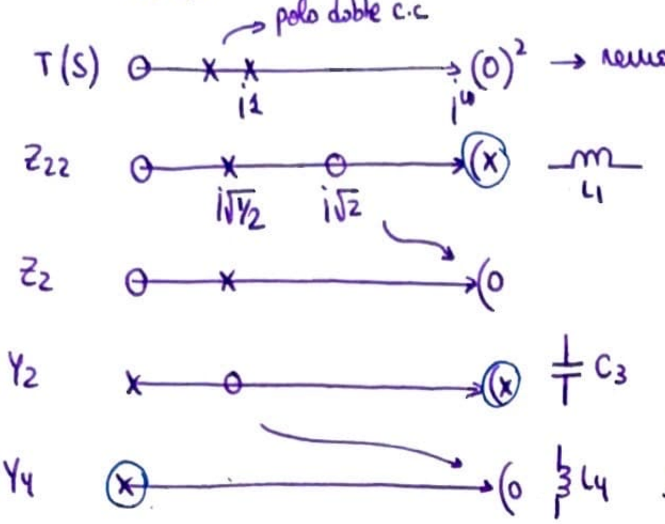


$T(s) = \dfrac{V_2}{I_1} = \dfrac{k \cdot s}{s^3+2s^2+2s+1}$ $\qquad I_2 = -\dfrac{V_2}{R_L}$ $\qquad Z: \begin{cases} V_1 = Z_{11} I_1 + Z_{12} I_2 \\ V_2 = Z_{21} I_1 + Z_{22} I_2 \end{cases}$

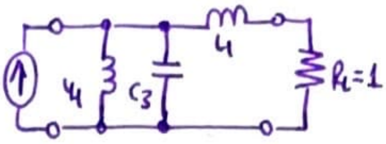
$V_2 = Z_{21} I_1 + Z_{22}\left(-\dfrac{V_2}{R_L}\right) \rightarrow V_2\left(1+\dfrac{Z_{22}}{R_L}\right) = Z_{21} I_1 \rightarrow T(s) = \dfrac{Z_{21}}{1+Z_{22}/R_L}$

Normalizando imp. $(R_L = 1) \rightarrow T(s) = \dfrac{Z_{21}}{1+Z_{22}}$ $\qquad Z_{21}$: num $\{T(s)\}$ impar → divido por par $\{$num$(T(s))\}$

$Z_{21} = \dfrac{ks}{2s^2+1} \quad \wedge \quad Z_{22} = \dfrac{s^3+2s}{2s^2+1} = \dfrac{s(s^2+2)}{2(s^2+1/2)}$



→ remociones: 2 en ∞
1 en 0



Síntesis analítica:

$\lim\limits_{s\to\infty} sL_1 = \lim\limits_{s\to\infty} Z_{22} \rightarrow L_1 = \lim\limits_{s\to\infty} \dfrac{Z_{22}}{s}$

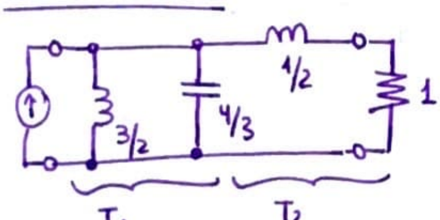
$L_1 = \lim\limits_{s\to\infty} \dfrac{1}{2}\dfrac{(s^2+2)}{(s^2+1/2)} = \dfrac{1}{2}$

$Z_2 = Z_{22} - sL_1 = \dfrac{s^3+2s}{2(s^2+1/2)} - \dfrac{s}{2} = \dfrac{s^3+2s-(s^3+s/2)}{2(s^2+1/2)} = \dfrac{3}{4}\dfrac{s}{s^2+1/2}$

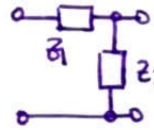
$Y_2 = \dfrac{4}{3}\dfrac{s^2+1/2}{s} \qquad \lim\limits_{s\to\infty} sC_3 = \lim\limits_{s\to\infty} Y_2 \rightarrow C_3 = \lim\limits_{s\to\infty}\dfrac{Y_2}{s} = \lim\limits_{s\to\infty}\dfrac{4}{3}\cdot\dfrac{s^2+1/2}{s^2} = \dfrac{4}{3}$

$Y_4 = Y_2 - sC_3 = \dfrac{4s^2+2}{3s} - \dfrac{4s}{3} = \dfrac{2}{3s} = \dfrac{1}{sL_4} \rightarrow L_4 = \dfrac{3}{2}$

↳ Red con valores:



$T_1 = \begin{pmatrix} 1 & 0 \\ \frac{4s}{3}+\frac{2}{3s} & 1 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ \frac{4s^2+2}{3s} & 1 \end{pmatrix}$

T_2: 

$T_2 = \begin{pmatrix} 1+\frac{Z_1}{Z_2} & Z_1 \\ \frac{1}{Z_2} & 1 \end{pmatrix}$

$T_2 = \begin{pmatrix} 1+\frac{s}{2}\cdot 1 & \frac{s}{2} \\ 1 & 1 \end{pmatrix} = \begin{pmatrix} \frac{s+2}{2} & \frac{s}{2} \\ 1 & 1 \end{pmatrix}$

$T_T = T_1 \cdot T_2 \qquad T: \begin{cases} V_1 = AV_2 + B(-I_2) \\ I_1 = CV_2 + D(-I_2) \end{cases} \rightarrow T(s) = \dfrac{V_2}{I_1} = \dfrac{1}{C}\Big|_{(-I_2)=0}$ posible según los cuadripolos elegidos

$C = \dfrac{4s^2+2}{3s}\cdot\dfrac{s+2}{2} + 1\cdot 1 = \dfrac{4s^3+8s^2+2s+4}{6s} + \dfrac{6s}{6s} = \dfrac{4s^3+8s^2+8s+4}{6s} = \dfrac{2}{3}\cdot\dfrac{s^3+2s^2+2s+1}{s} \rightarrow \dfrac{1}{C} = T(s)$ se cumple para $k = 3/2$