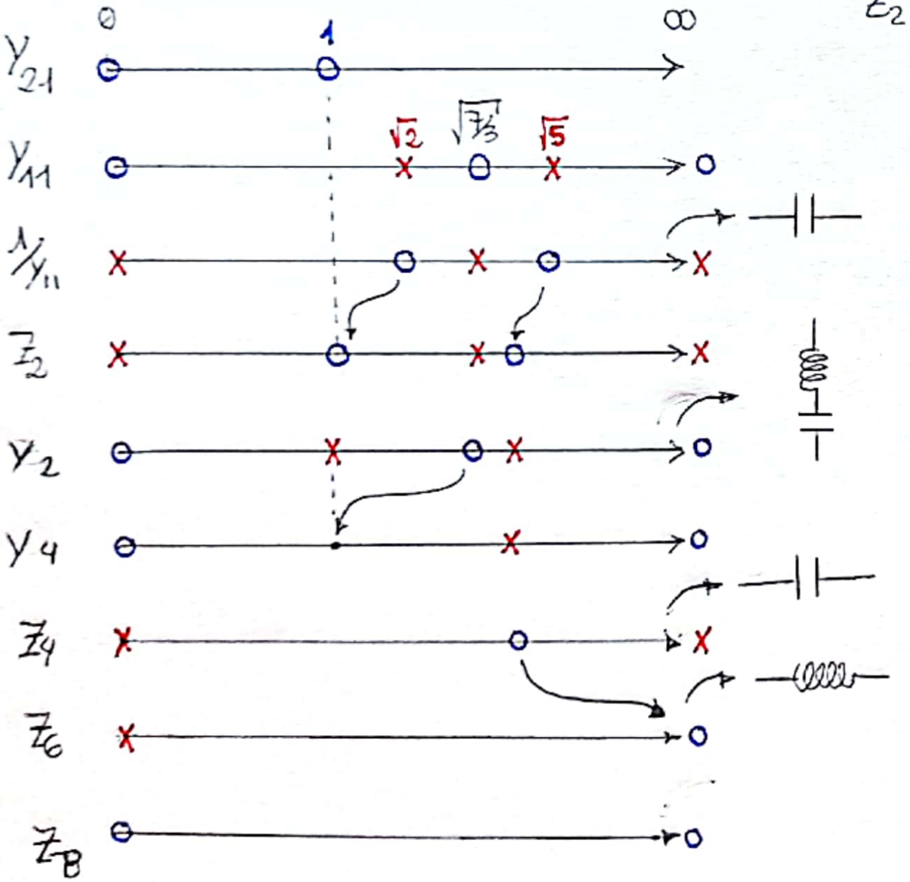
$$Y_{11}=\frac{3s\left(s^2+\frac{7}{3}\right)}{(s^2+2)(s^2+5)} \qquad Y_{21}=\frac{s(s^2+1)}{(s^2+2)(s^2+5)}$$

$$Y_{11}=\left.\frac{I_1}{V_1}\right|_{V_2=0} \qquad Y_{21}=\left.\frac{I_2}{V_1}\right|_{V_2=0}$$

$$T(s)=\frac{Y_{21}}{Y_{11}}=\left.\frac{I_2}{I_1}\right|_{V_2=0}=\frac{(s^2+1)}{3\left(s^2+\frac{7}{3}\right)}$$

- Empezar en serie
- Terminar en derivación



$$Z_2=\frac{1}{Y_{11}}-\frac{K_0'}{s} \quad / \quad K_0'=\lim_{s^2\to -1} s\cdot\frac{1}{Y_{11}}=\lim_{s^2\to -1}\frac{(s^2+2)(s^2+5)}{3\left(s^2+\frac{7}{3}\right)}=1\to \boxed{C_1=1}$$

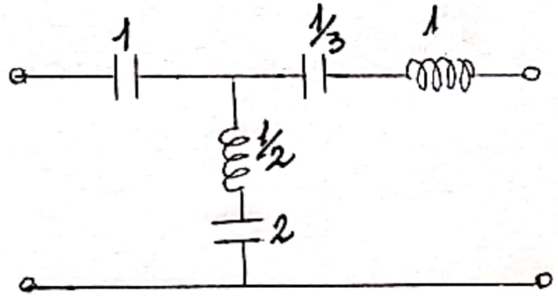
$$Z_2=\frac{s^4+7s^2+10-3s^2-7}{3s\left(s^2+\frac{7}{3}\right)}=\frac{s^4+4s^2+3}{3s\left(s^2+\frac{7}{3}\right)}\to Y_2=\frac{3s^3+7s}{(s^2+1)(s^2+3)}$$

$$Y_4=Y_2-\underbrace{\frac{2K_1 s}{s^2+1}}_{Y_1(s)} \quad / \quad 2K_1=\lim_{s^2\to -1}\frac{s^2+1}{s}\cdot Y_2(s)=\lim_{s^2\to -1}\frac{3s^2+7}{(s^2+3)}=2$$

$$Y_1(s)\to Z_1(s)=\frac{1}{2K_1}s+\frac{1}{2K_1 s}\to \boxed{L_2=\frac{1}{2}} \wedge \boxed{C_2=2}$$

$$Y_4=\frac{3s^3+7s-2s^3-6s}{(s^2+1)(s^2+3)}=\frac{s\cancel{(s^2+1)}}{\cancel{(s^2+1)}(s^2+3)}=\frac{s}{s^2+3}$$

$$Z_4=\frac{s^2+3}{s}=s+\frac{3}{s}\to \boxed{L_3=1} \quad \boxed{C_3=\frac{1}{3}}$$



$$Z_{11} = Z_A + Z_{12} = \frac{1}{s} + \frac{s^2+1}{2s} = \frac{s^2+3}{2s} \qquad Z_{21} = Z_{12} = \frac{s^2+1}{2s}$$

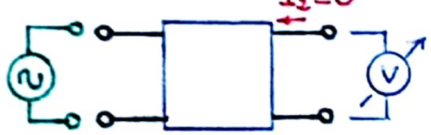
$$Z_{22} = Z_c + Z_{12} = s + \frac{3}{s} + \frac{s^2+1}{2s} = \frac{3s^2+7}{2s}$$

$$\Delta Z = Z_{11}Z_{22} - Z_{12} = \frac{(s^2+3)(3s^2+7)}{4s^2} - \frac{(s^2+1)^2}{4s^2} = \frac{3s^4+7s^2+9s^2+21-s^4-2s^2-1}{4s^2} = \frac{s^4+7s+10}{2s^2}$$

$$Y_{11} = \frac{Z_{22}}{\Delta Z} = \frac{\frac{3s^2+7}{2s}}{\frac{s^4+7s+10}{2s^2}} = \frac{3s\left(s^2+\frac{7}{3}\right)}{(s^2+2)(s^2+5)} \quad \checkmark$$

$$Y_{21} = \frac{Z_{21}}{\Delta Z} = \frac{\frac{s^2+1}{2s}}{\frac{s^4+7s+10}{2s^2}} = \frac{s(s^2+1)}{(s^2+2)(s^2+5)} \quad \checkmark$$

$$T(s)=\left.\frac{V_2}{V_1}\right|_{I_2=0}=\frac{K(s+1)}{(s+2)(s+4)}=\frac{z_{12}}{z_{11}}=-\frac{y_{12}}{y_{22}}\rightarrow z_{11}=\frac{Q(s)}{D(s)}=\frac{(s+2)(s+4)}{(s+1)(s+3)}$$



• Empiezo en serie

• Termino en derivación

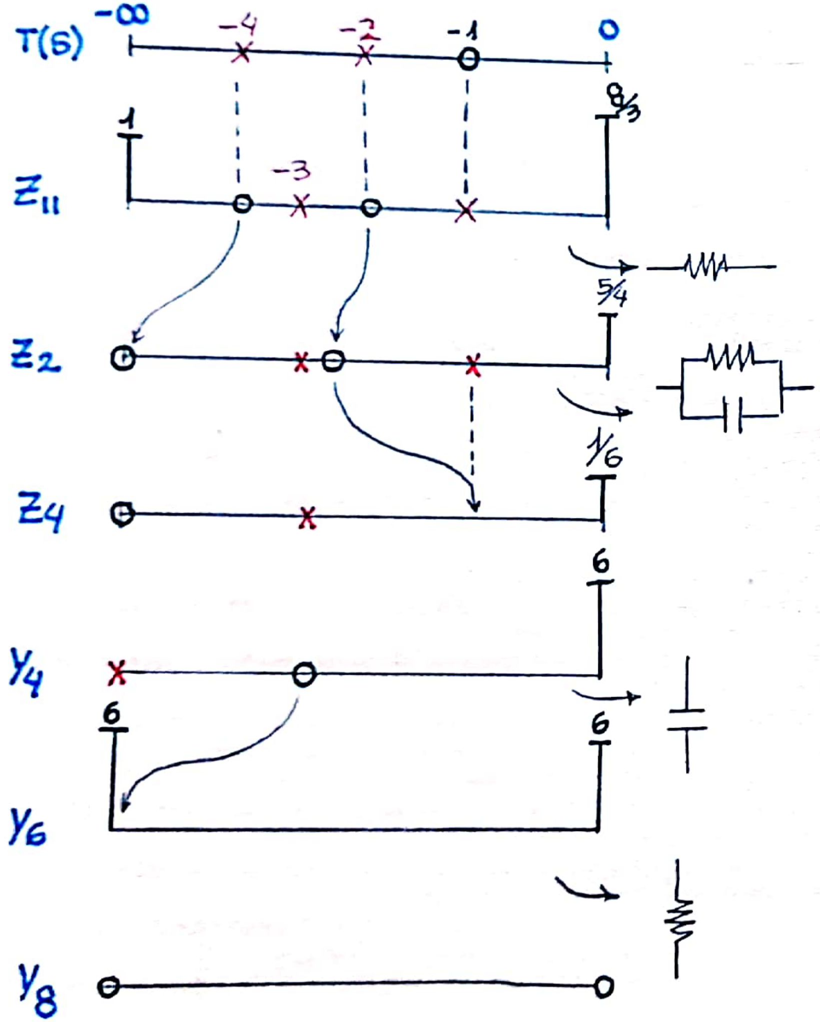
$$Z_2=z_{11}-K_\infty=\frac{s^2+6s+8}{(s+1)(s+3)}-1=\frac{2s+5}{(s+1)(s+3)}\qquad \boxed{R=1}$$

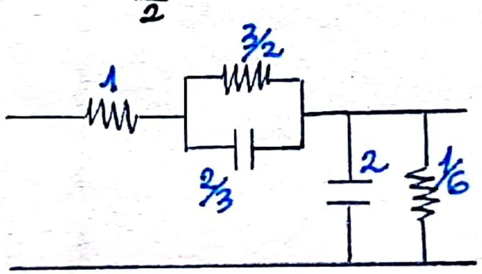
$$Z_4=Z_2-\frac{K_1}{s+1}\ \Big/\ K_1=\lim_{s\to -1}(s+1)\cdot Z_4=\frac{3}{2}\rightarrow \boxed{R=\frac{3}{2}}\ \boxed{C=\frac{2}{3}}$$

$$Z_4=\frac{2s+5-\frac{3}{2}s-\frac{9}{2}s}{(s+1)(s+3)}=\frac{\frac{1}{2}}{s+3}\rightarrow Y_4=\frac{s+3}{\frac{1}{2}}$$

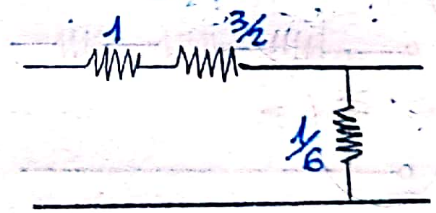
$$Y_6=Y_4-K_\infty s\ \Big/\ K_\infty=\lim_{s\to\infty}\frac{Y_4}{s}=2\rightarrow \boxed{C=2}$$

$$Y_6=\frac{s+3}{\frac{1}{2}}-2s=6\rightarrow \boxed{R=\frac{1}{6}}$$

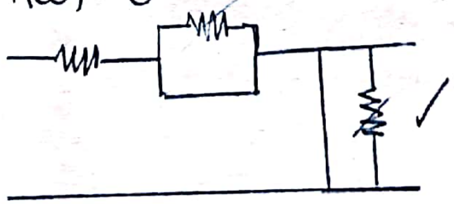




$$T(0)=\frac{K}{8}$$



$T(\infty)=0$



✓

$$\frac{K}{8}=\frac{\frac{1}{6}}{1+\frac{3}{2}+\frac{1}{6}}=\frac{1}{16}\rightarrow \boxed{K=\frac{1}{2}}$$