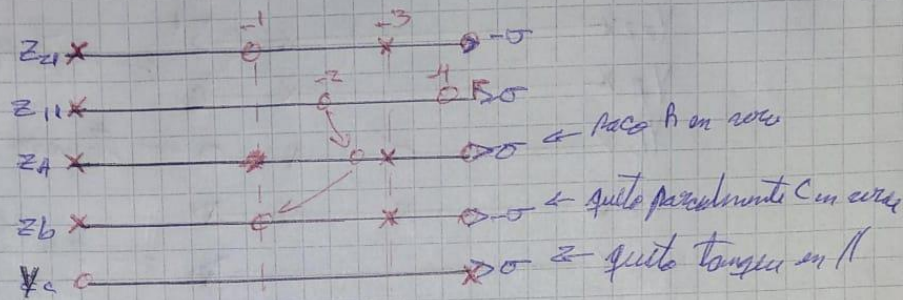


$$T(s) = \frac{V_2}{V_1} \Big|_{I_2=0} = h \frac{(s+1)}{(s+2)(s+4)} \rightarrow \frac{Z_{21}}{Z_{11}} = -\frac{V_{21}}{V_{12}}$$

$$A = s(s+3) ; Z_{21} = \frac{h(s+1)}{s(s+3)} ; Z_{11} = \frac{(s+2)(s+4)}{s(s+3)}$$



$$Z_{11}(h) = \lim_{s \rightarrow \infty} \frac{(s+2)(s+4)}{s(s+3)} = 1 = h_1$$

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

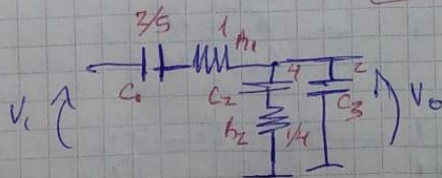
$$\frac{1}{sC_1} = Z_A(-1) \rightarrow \frac{1}{C_1} = \lim_{s \rightarrow -1} \frac{3s+8}{s(s+3)} = \frac{5}{2} \rightarrow C_1 = \frac{2}{5}$$

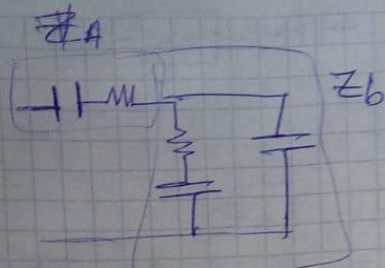
$$Z_B = Z_A - \frac{1}{sC_1} = \frac{1/2 (s+1)}{s(s+3)} ; V_{CH} = \frac{1/4 s}{1/4 s + s}$$

$$\frac{1}{h_2} = \lim_{s \rightarrow (-1/h_2)} \frac{1/2 (-1/h_2) (s+1/2h_2)}{s} = \frac{1/2 (-1/h_2) (s(s+3)) (s+1)}{s} = 4$$

$h_2 = 1/4$
 $C_2 = 4$

$$V_C = V_B - V_{CH} = 2s \Rightarrow C_3 = 2$$





$$T(s) = \frac{Z_L}{Z_A + Z_L}$$

$$Z_L = \left(\frac{1}{0.25 + j0.4} + 2s \right)^{-1} = \left(\frac{4s}{s+1} + 2s \right)^{-1}$$

$$Z_L = \left(\frac{4s + 2s(s+1)}{s+1} \right)^{-1} = \frac{s+1}{2s^2 + 6s} = \frac{s+1}{2s(s+3)}$$

$$Z_A = \frac{1}{s0.4} + 1 = \frac{\cancel{1+3s}}{2.5+s}$$

$$T = \frac{s+1}{2s(s+3)} \left[\frac{2.5+s}{s} + \frac{s+1}{2s(s+3)} \right]$$

$$Z_A + Z_L = \frac{(2.5+s)(s+3)2 + s+1}{2s(s+3)} = \frac{2s^2 + 11s + 15 + s+1}{2s(s+3)}$$

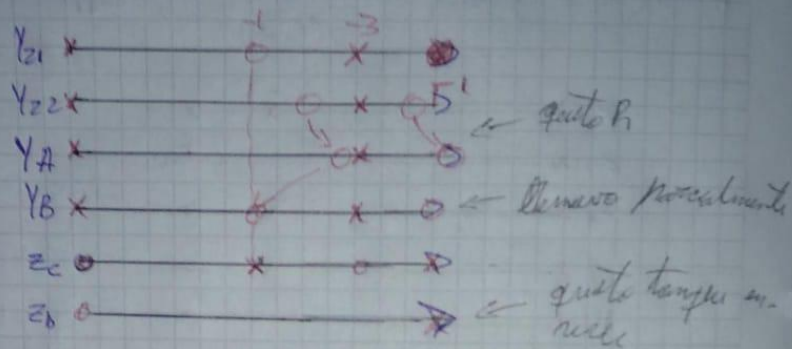
$$Z_A + Z_L = \frac{2s^2 + 12s + 16}{2s(s+3)} = \frac{s^2 + 6s + 8}{s(s+3)}$$

$$\frac{Z_L}{Z_A + Z_L} = \frac{(s+1)}{2s(s+3)} \cdot \frac{(s(s+3))}{(s^2 + 6s + 8)} = \frac{1/2(s+1)}{(s+2)(s+4)}$$

$$K = 1/2$$

$$T(s) = \frac{V_z}{V_c} \Big|_{I_2=0} = \frac{h(s+1)}{(s+2)(s+4)} = \frac{-Y_{21}}{Y_{22}}$$

$$A = s(s+3)$$



$$Y_{22}(s) = \lim_{s \rightarrow \infty} \frac{s(s+2)(s+4)}{s(s+3)} = 1 \Rightarrow \boxed{h_1 = 1}$$

$$Y_A = Y_{22} - 1 = \frac{s^2 + 6s + 8}{s(s+3)} - 1 = \frac{3s+8}{s(s+3)}$$

$$\frac{1}{sL_1} = \lim_{s \rightarrow -1} \frac{3s+8}{s(s+3)} \Rightarrow Y_{L_1} = \lim_{s \rightarrow -1} \frac{3s+8}{s+3} = \frac{5}{2} \Rightarrow \boxed{L_1 = 2/s}$$

$$Y_B = \frac{3s+8}{s(s+3)} - \frac{5/2}{s} = \frac{s(s-5/2) + (8-3.5/2)}{s(s+3)} = \frac{1/2(s+1)}{s(s+3)}$$

$$Z_C = \frac{s(s+3)}{1/2(s+1)}; \quad Z_{RL} = \frac{1}{\frac{1}{h} + \frac{1}{sL}} = \frac{sh}{s+h}$$

$$h_2 = \lim_{s \rightarrow -1} \frac{s(s+3)}{1/2(s+1)} \cdot \frac{(s+1)}{s} = 4 \Rightarrow \boxed{R_2 = 4, L_2 = 4}$$

$$Z_D = Z_C - Z_{RL} = \frac{2s(s+3)}{s+1} - \frac{34}{s+1} = \frac{2s(s+1)}{s+1} = 2s \Rightarrow \boxed{L_3 = 2}$$

