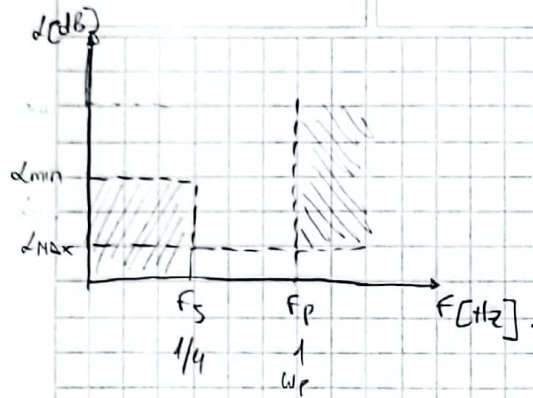


TS4

HOJA Nº

FECHA

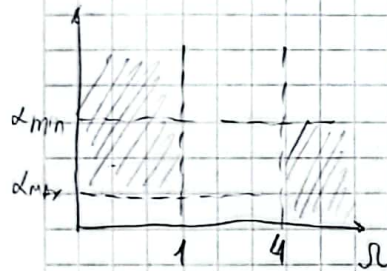


$$\alpha_{\max} = 1$$

$$\alpha_{\min} = 30$$

$$F_p = 40 \text{ KHz}$$

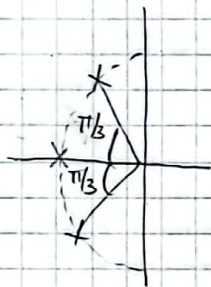
$$F_s = 10 \text{ KHz}$$



$$\left| \frac{L}{\omega} \right| = \frac{1}{\omega}$$

$$\varepsilon^2 = 0,2589 \rightarrow \varepsilon = 0,51$$

$$n = \frac{\log \left(\frac{10^{0,1 \alpha_{\min}} - 1}{10^{0,1 \alpha_{\max}} - 1} \right)}{2 \log (0,51)} = 2,9784 \Rightarrow \boxed{n=3}$$



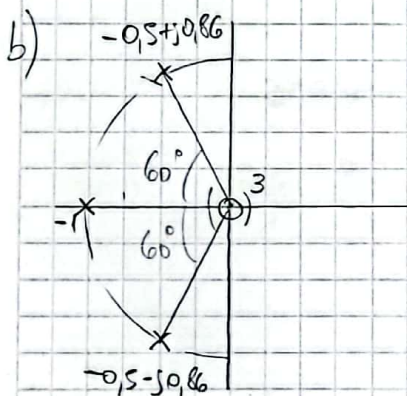
$$T(s) = \frac{1}{s+1} \cdot \frac{1}{s^2 + s 2 \cos \left(\frac{\pi}{3} \right) + 1}$$

$$\omega_B = \omega_p \cdot \varepsilon^{1/n} = 1 \cdot (0,51)^{1/3}$$

$$\omega_B = 0,799$$

$$T(s) = T(s) \Big|_{s=\frac{1}{s}} = \frac{1}{\frac{1}{s} + 1} \cdot \frac{1}{\frac{1}{s^2} + \frac{1}{s} 2 \cos \left(\frac{\pi}{3} \right) + 1}$$

$$T(s) = \frac{s}{s+1} \cdot \frac{s^2}{s^2 + s 2 \cos \left(\frac{\pi}{3} \right) + 1}$$



$$s^3 + s^2 \overbrace{2 \cos \left(\frac{\pi}{3} \right)}^{=1} + s + s^2 + s \overbrace{2 \cos \frac{\pi}{3}}^{=1} + 1$$

$$s^3 + s^2 + s + s^2 + s + 1$$

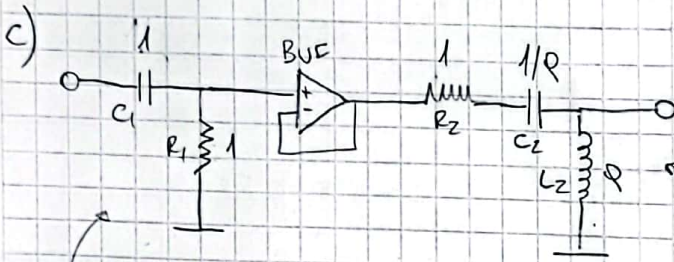
$$s^3 + 2s^2 + 2s + 1$$

$$s_1: -1$$

$$s_2: -0,5 + j0,86$$

$$s_3: -0,5 - j0,86$$

NOTA



$$\frac{Z_2}{Z_1 + Z_2} = \frac{R}{\frac{1}{sC} + R}$$

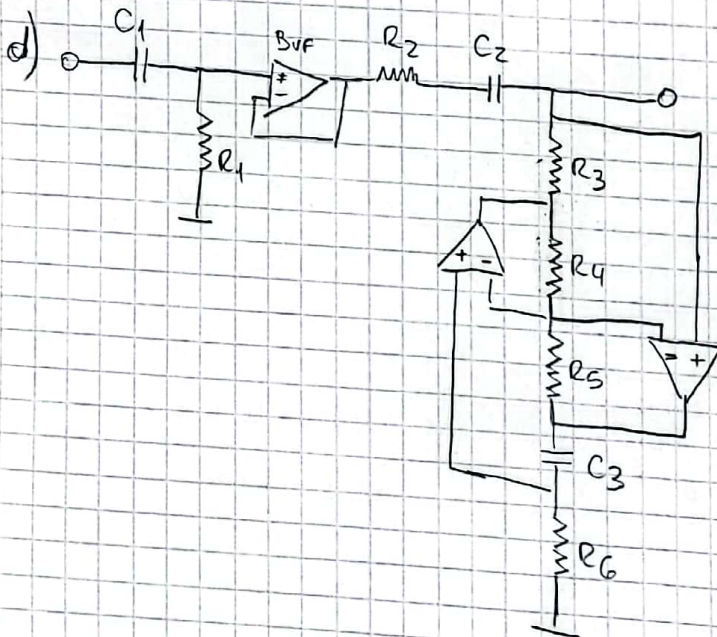
$$T_1(s) = \frac{sCR}{sCR + 1} \Rightarrow C_1 = 1 \left. \begin{array}{l} \text{Bnd Pve} \\ R = 1 \end{array} \right\} \text{Prede: } \frac{s}{s+1}$$

$$T_2(s) = \frac{sL}{sL + R + \frac{1}{sC}} = \frac{s^2 LC}{s^2 LC + sRC + 1}$$

$$= \frac{s^2}{s^2 + s \frac{R}{L} + \frac{1}{LC}}$$

Adopto $C_2 = 100 \text{ nF} \Rightarrow \omega_B^2 = \frac{1}{L_2 C_2} \Rightarrow (0,799)^2 \cdot 100 \text{ nF} = \frac{1}{L_2} \Rightarrow L_2 = 15,66 \text{ mH}$

$$\frac{\omega_B}{R} = \frac{R}{L} \Rightarrow 12,51 \text{ M}\Omega = R$$



- $R_4 = R_5$
- $R_6 = \frac{1}{\omega_c C_3}$

NOTA