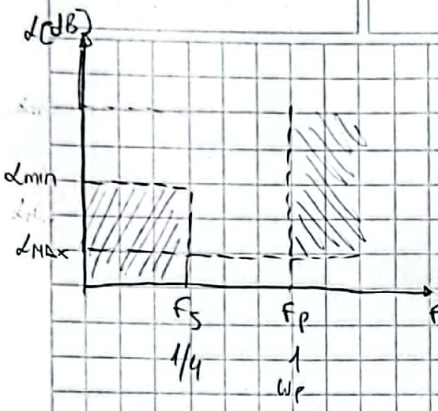
TS4

HOJA Nº

FECHA



$\alpha_{max} = 1$

$\alpha_{min} = 30$

$f_p = 40\,KHz$

$f_s = 10\,KHz$

$$\boxed{\Omega = \frac{-1}{\omega}}$$

$$\varepsilon^2 = 0{,}2589 \Rightarrow \varepsilon = 0{,}51$$

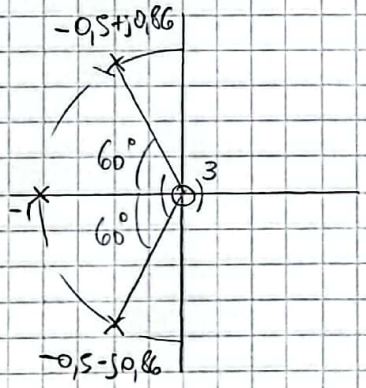
$$n = \frac{\log\left(\frac{10^{0{,}1\alpha_{min}} - 1}{10^{0{,}1\alpha_{max}} - 1}\right)}{2\log\left(\frac{1}{\Omega_s}\right)} = 2{,}9784 \Rightarrow \boxed{n = 3}$$

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

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

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

b)



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

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

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

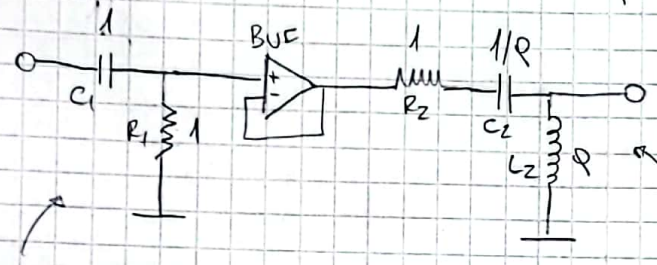
$s_1 : -1$

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

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

NOTA

c)



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

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

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

$$T_1(s) = \frac{sCR}{sCR+1} \Rightarrow \begin{matrix} C=1 \\ R=1 \end{matrix} \Big\} \text{Pasa Pue} \quad \text{Puede: } \frac{s}{s+1}$$

d)

NOTA