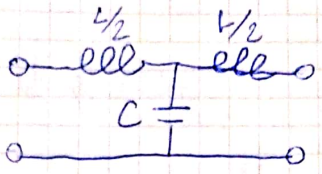
5) $f_c = 20K$

$R_L = 600\,\Omega$



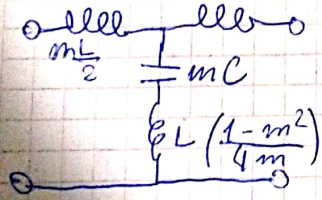
$f_1 \to \infty \begin{cases} \omega_1 = 22K \\ \omega_2 = 10K \\ \omega_3 = \infty \end{cases}$

$1 + \frac{Z_1}{4Z_2} = 0$

$\omega^2 \frac{LC}{4} = -1$

$\omega_0 = \frac{2}{\sqrt{LC}}$ $\quad L = C = 2$

m - derivada 22K



$\omega_c^2 = 1,1^2 = \frac{1}{\frac{1-m^2}{4m}}$

$m = 0,417$

$C' = 0,833$

$L_1' = 0,834$

$L_2' = 0,991$

m - derivada 40K

$4 = \omega_c^2 = \frac{1}{1-m^2} \Rightarrow m = 0,866 = \frac{\sqrt{3}}{2}$

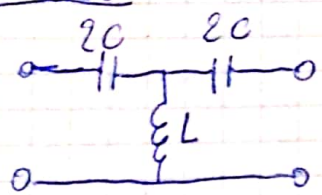
$C' = 1,732$

$L_1' = 0,866 \cdot 2$

$L_2' = \frac{\sqrt{3}}{3} = 0,144$

8) $f_c = 10GHz$ HPF $f_z = 9,5GHz \Rightarrow f_{zn}^2 = 0,95$

K-cte

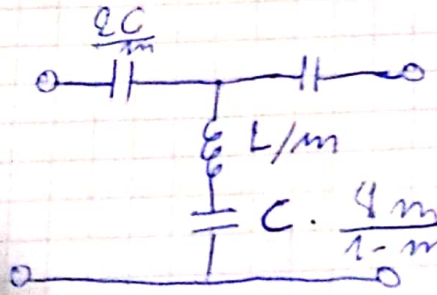


$1 + \frac{Z_1}{4Z_2} = 0$ $\quad Z_1 = \frac{1}{sC}$ $\quad Z_2 = sL$

$\frac{1}{4s^2CL} = -1$

$\omega_c = \frac{1}{2\sqrt{LC}}$ $\quad [C = L = 1/2]$

m-derivada



$0,95^2 = \frac{1}{\frac{L}{m} \cdot \frac{4m}{1-m^2}}$

$0,95^2 = 1 - m^2$

$m = 0,224 < \frac{\sqrt{5}}{10}$

$\frac{C}{m} = \sqrt{5} = 2,236$

$\frac{L}{m} = 2,236$

$C \cdot \frac{4m}{1-m^2} = 0,471$