

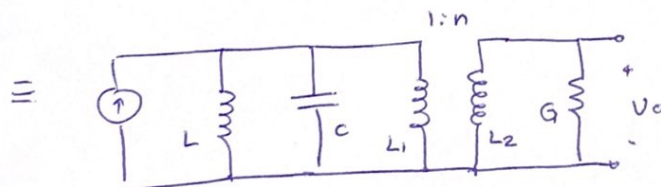
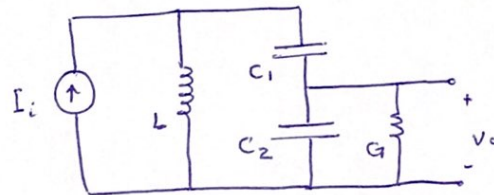
بالعربي

رضا ادبشور
9814303

کوشش اول مدار معادل

#1

معمولی
 $R_L = 400 \Omega$
 $R_t = 40 k\Omega$
 $f_0 = 5 MHz$
 $BW = 100 kHz$



$$R_t = \frac{R_L}{n^2} \Rightarrow n = \sqrt{\frac{400}{40 \times 10^3}} \approx 0.1$$

$$C = \frac{C_1 C_2}{C_1 + C_2}, \quad n = \frac{C_1}{C_1 + C_2} = 0.1$$

$$Q_t = \frac{f_0}{BW} = \frac{5 \times 10^6}{100 \times 10^3} = 50 \Rightarrow Q_t = R_t C \omega_0 \Rightarrow C = \frac{Q_t}{R_t \times 2\pi f_0} = \frac{50}{40 \times 10^3 \times 2\pi \times 5 \times 10^6}$$

$$\Rightarrow C = 3.97 \times 10^{-11} = 39.7 \times 10^{-12} = 39.7 \text{ pF}$$

$$\begin{cases} 39.7 \times 10^{-12} = \frac{C_1 C_2}{C_1 + C_2} \\ 0.1 = \frac{C_1}{C_1 + C_2} \end{cases} \Rightarrow C_1 = ? \quad C_2 = ?$$

$$\omega_0 = 2\pi f_0 = \frac{1}{\sqrt{LC}} \Rightarrow L = ?$$