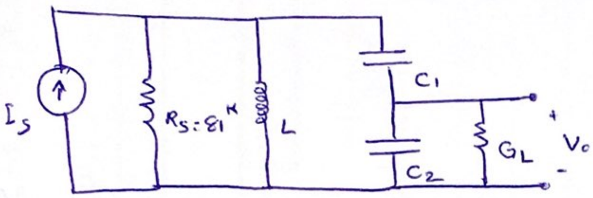
#2



$$\begin{cases} BW = 6.6^{MHZ} \\ R_L = 9^K \\ R_S = 81^K \\ f_o = 16^{MHZ} \end{cases}$$

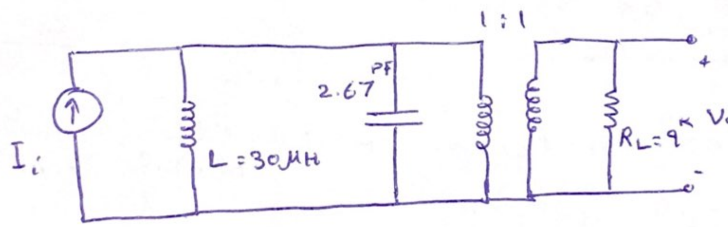
$$Q_t = \frac{f_o}{BW} = \frac{16\times10^6}{6.6\times10^6} = 2.42 \Rightarrow Q_t = R_t C \omega_o \overset{R_L = R_t}{\Rightarrow} C = \frac{Q_t}{R_L \omega_o} = \frac{2.42}{9^K \times 2\pi \times 16^M}$$

$$\Rightarrow \boxed{C = 2.67\ PF} \qquad \Rightarrow n = \sqrt{\frac{R_L}{R_L}} = 1 \qquad \omega_o = \frac{1}{\sqrt{LC}} \Rightarrow \omega_o^2 = \frac{1}{LC}$$

$$\Rightarrow L = \frac{1}{\omega_o^2 C} = \frac{1}{(2\pi\times16\times10^6)^2 \times 2.67\times10^{-12}} = \boxed{30\ \mu H}$$

$$\begin{cases} \dfrac{C_1 C_2}{C_1 + C_2} = 2.67^{PF} \\ \\ \dfrac{C_1}{C_1 + C_2} = 1 \Rightarrow C_1 + C_2 = C_1 \Rightarrow \boxed{C_2 = 0} \end{cases}$$

$\Rightarrow$



$$Q'_T = \frac{\omega_o C}{n^2 G_L} = \frac{2\pi\times16\times10^6 \times 2.67\times10^{-12}}{1 \times (9\times10^3)} = 3\times10^{-8} \quad , \quad Q_E = \frac{\omega_o (C_1 + C_2)}{G}$$

$$\begin{cases} 1)\ n Q'_T \cdot Q_E \geq 100 \\ 2)\ Q_E \geq 10 \end{cases}$$