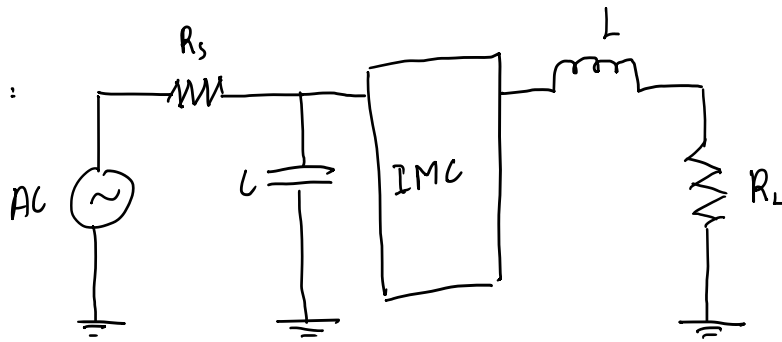


3. Dik:



$$R_s = 2 \text{ k}\Omega$$

$$R_L = 100 \Omega$$

$$L = 0,5 \mu\text{H}$$

$$C = 3 \text{ pF}$$

Dit: Rangkaian IMC

Jawab:

Gunakan jawaban dari soal no. 1

$$L_{\text{Total}} \rightarrow L_T = 1,39 \mu\text{H}$$

$$L + L' = 1,39 \mu\text{H}$$

$$0,5 \mu\text{H} + L' = 1,39 \mu\text{H}$$

$$L' = 0,89 \mu\text{H} \rightarrow L \text{ \& } L' \text{ dirangkai seri}$$

$$C_{\text{Total}} \rightarrow C_T = 6,94 \text{ pF}$$

$$C + C' = 6,94 \text{ pF}$$

$$3 \text{ pF} + C' = 6,94 \text{ pF}$$

$$C' = 3,94 \text{ pF} \rightarrow C \text{ \& } C' \text{ dirangkai paralel}$$

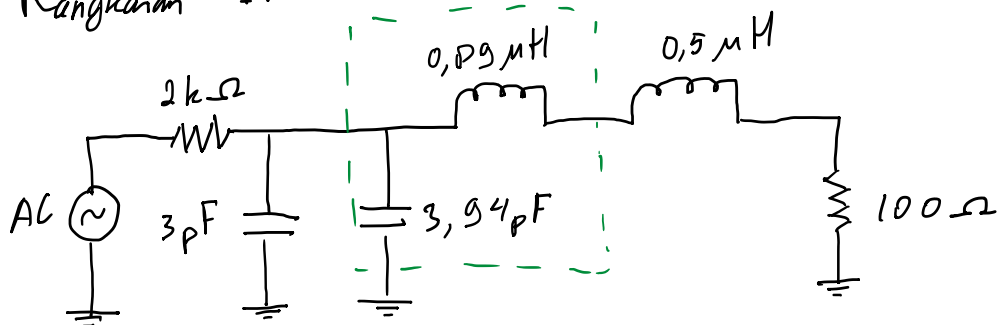
$$L_{\text{seri}} = L_1 + L_2 + \dots$$

$$\frac{1}{L_{\text{paralel}}} = \frac{1}{L_1} + \frac{1}{L_2} + \dots$$

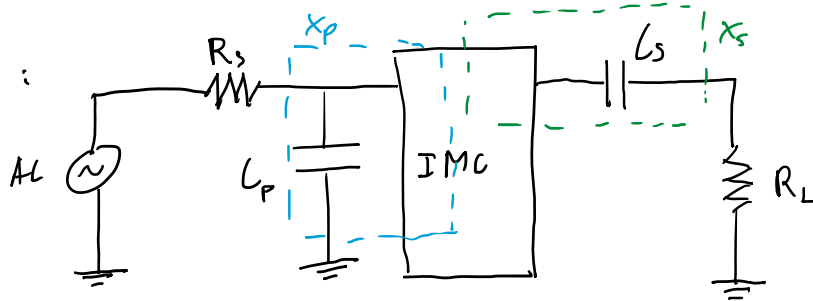
$$\frac{1}{C_{\text{seri}}} = \frac{1}{C_1} + \frac{1}{C_2} + \dots$$

$$C_{\text{paralel}} = C_1 + C_2 + \dots$$

Rangkaian IMC :



4. Dik :



$$\begin{aligned} R_s &= 2 \text{ k}\Omega \\ R_L &= 100 \Omega \\ C_s &= 5 \text{ pF} \\ C_p &= 3 \text{ pF} \\ f &= 50 \text{ MHz} \end{aligned}$$

Dit : Rangkaian IMC

Jawab :

Gunakan jawaban no. 1 untuk menentukan  $L_s$  seri dengan  $C_s$  dan  $R_L$

$$X_s = Q_s \cdot R_s \quad \text{dengan} \quad R_s = R_L = 100 \Omega$$

$$X_s = X_L - X_C$$

$$2\pi f L_s - \frac{1}{2\pi f C_s} = Q_s \cdot R_s$$

$$X_C = -\frac{1}{j\omega C} \quad X_L = j\omega L$$

$$2\pi f L_s = Q_s \cdot R_s + \frac{1}{2\pi f C_s}$$

$$\frac{1}{X_p} = \frac{1}{X_L} - \frac{1}{X_C}$$

$$2 \cdot 3,14 \cdot 50 \times 10^6 \cdot L_s = \sqrt{19} \cdot 100 + \frac{1}{2 \cdot 3,14 \cdot 50 \times 10^6 \cdot 5 \times 10^{-12}}$$

$$314 \times 10^6 L_s = 100\sqrt{19} + 636,94$$

$$L_s = 2,98 \times 10^{-6} \text{ H} = 2,98 \text{ }\mu\text{H} \rightarrow L_s \text{ \& } C_s \text{ dirangkai seri}$$

$$C_{\text{Total}} \rightarrow C_T = 6,94 \text{ pF}$$

$$C_p + C_p' = 6,94 \text{ pF}$$

$$3 \text{ pF} + C_p' = 6,94 \text{ pF}$$

$$C_p' = 3,94 \text{ pF} \rightarrow C_p \text{ \& } C_p' \text{ dirangkai paralel}$$

Rangkaian IMC :

