

20-10-20

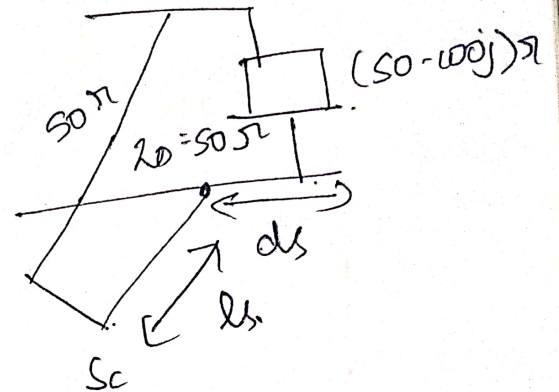
# Assessment - 2

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①

$$Z_L = 50 - j100$$

$$Z_0 = 50\Omega$$

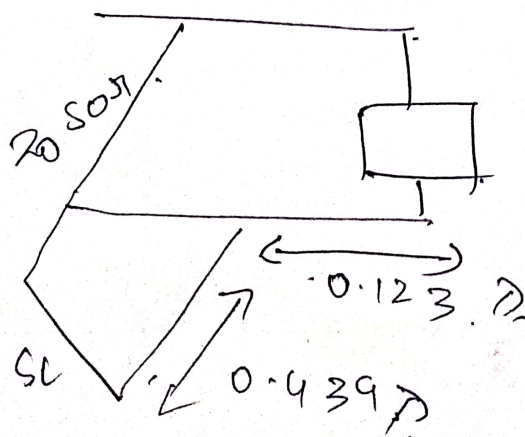


normalized  $Z'_L = 1 - j(2)$

The value of stub constant = 2

$$\begin{aligned} \text{location of stub} &= 0.312\lambda \\ &\quad - 0.189\lambda \\ \hline &0.123\lambda \end{aligned}$$

$$\begin{aligned} \text{length of stub} &= 0.189 \\ &\quad + 0.250 \\ \hline &0.439\lambda \end{aligned}$$



2

$$f_c = 4 \times 10^3 \text{ Hz} \quad R = 500 \Omega$$

$$L = \frac{R}{\pi f_c} = \frac{500}{2.14 \times 4 \times 10^3}$$

$$= \frac{500}{12.56 \times 10^3} = 39.80 \times 10^{-3}$$

$$\boxed{L = 39.80 \text{ mH}}$$

$$C = \frac{1}{\pi f_c R} = \frac{1}{2.14 \times 4 \times 10^3 \times 500}$$

$$= \frac{1}{6280 \times 10^3} = 1.592 \times 10^{-7}$$

$$\boxed{C = 0.159 \mu\text{F}}$$

3

$$f_c = 4 \times 10^3 \text{ Hz}$$

(3)

$$R_k = 700 \Omega$$

$$L = \frac{R}{4\pi f_c} = \frac{700}{4 \times 3.14 \times 4 \times 10^3} = \frac{700}{100 \times 50.24}$$

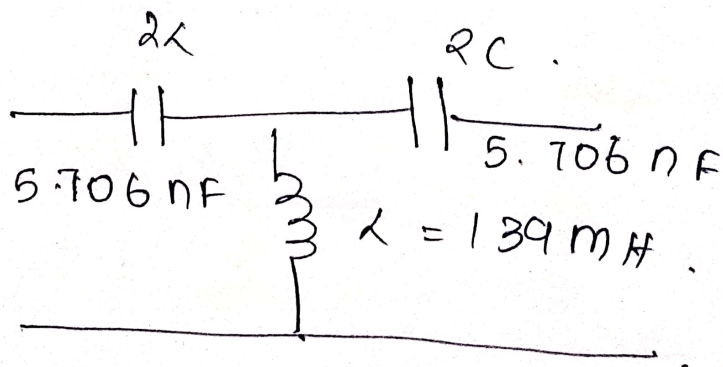
$$= 0.139 = 139 \text{ mH}$$

$$\boxed{L = 139 \text{ mH}}$$

$$C = \frac{1}{4\pi k f_c} = \frac{1}{4 \times 3.14 \times 4 \times 10^3 \times 700} = \frac{1}{3.5163 \times 10^3}$$

$$\boxed{C = 2.853 \text{ nF}}$$

T section





# Smith Chart

Location of stub

Length of stub  
0.439λ

0.123λ

0.189λ

