

Given Information,

$$C_1 = 0.01 \mu\text{F}$$

$$R_1 = 470 \text{ k}\Omega$$

$$R_2 = 5.1 \text{ k}\Omega$$

$$R_3 = 100 \text{ k}\Omega$$

According to Maxwell's bridge,

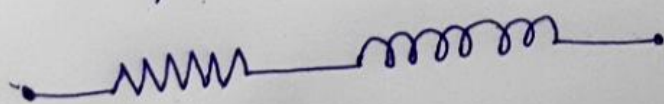
$$\begin{aligned} R_x &= \frac{R_2 R_3}{R_1} = \frac{5.1 \times 10^3 \times 100 \times 10^3}{470 \times 10^3} \\ &= \frac{51000}{47} = 1085.106 \Omega \\ &= 1.085 \text{ k}\Omega \end{aligned}$$

$$L_x = C_1 R_2 R_3$$

$$\begin{aligned} &= 0.01 \times 10^{-6} \times 5.1 \times 10^3 \times 100 \times 10^3 \\ &= 0.01 \times 5.1 \times 100 \\ &= 5.1 \text{ H} \end{aligned}$$

The series equivalent of the unknown impedance is

$$L_x = 5.1 \text{ H}$$



$$R_x = 1.085 \text{ k}\Omega$$