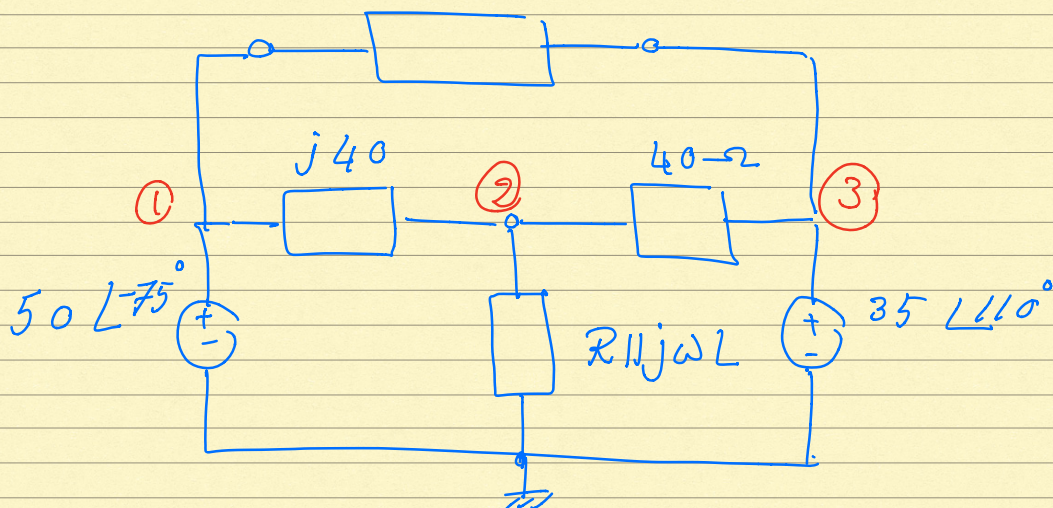


$$\omega = 20 \text{ rad/sec.}$$

Representing the circuit by phasors

$$50 + j20 \times 6 - j \frac{1}{20 \times 5 \times 10^{-3}}$$



$$V_1 = 50 \angle -75^\circ$$

$$V_2 = 21.25 \angle -168.8^\circ$$

$$V_3 = 35 \angle 110^\circ$$

Using nodal voltage method, we apply KCL
at node (2)

$$\frac{V_1 - V_2}{j40} + \frac{V_3 - V_2}{40} = \frac{V_2}{R \parallel j\omega L}$$

Substituting for V_1 , V_2 & V_3 , we get
after simplifying

$$\frac{1}{R} - j \frac{1}{20L} = 0.04 - j0.01176$$

$$\frac{1}{R} = 0.04 \rightarrow R = 25 \Omega$$

$$\frac{1}{20L} = 0.01176 \rightarrow L = 4.25 \text{ H}$$