



$$V_T = 45 \angle 30^\circ \text{ V}$$

$$L_2 = 35 \text{ mH}$$

$$L_1 = 60 \text{ mH}$$

$$R_1 = 6 \Omega$$

$$R_2 = 9 \Omega$$

$$R_3 = 6 \Omega$$

$$\omega = 300 \text{ rad/s}$$

$$C_1 = 400 \mu\text{F}$$

$$V_T = 45 \angle 30^\circ \rightarrow v_T = 45\sqrt{2} \sin(300t + 30)$$

$$I_1 = I_2 + I_3$$

$$V_{R2} + V_{L2} = V_{R3} + V_{C1} \Rightarrow \dots = \frac{10}{j2}$$

$$\frac{V_{L2}}{I_2} = j\omega L_2 \Rightarrow V_{L2} = j300 \cdot 35 \cdot 10^{-3} I_2 \Rightarrow V_{L2} = 10.5j I_2$$

$$\frac{V_{C1}}{I_3} = \frac{j}{\omega C_1} \Rightarrow V_{C1} = -j \frac{I_3}{300 \cdot 400 \cdot 10^{-6}} \Rightarrow V_{C1} = -j I_3 \frac{10.000}{1766}$$

$$V_{C1} = -\frac{25}{3} j I_3$$

$$V_{R2} = 9 I_2$$

$$V_{R3} = 6 I_3$$

$$\text{So } 9 I_2 + 10.5j I_2 = 6 I_3 + \left(-\frac{25}{3} j I_3\right) \quad (1)$$

$$V_{T1} = V_{R1} + V_{L1} + V_{R2} \Rightarrow$$

$$45 \angle 30^\circ = 6I_1 + V_{L1} + V_{R2}$$

$$\frac{V_{L1}}{I_1} = j\omega L_1 \Rightarrow V_{L1} = j300 \cdot 60 \cdot 10^{-3} \cdot I_1 \Rightarrow V_{L1} = 18jI_1$$

$$\text{So } 45 \angle 30^\circ = 6I_1 + 18jI_1 + V_{R2}$$

$$\text{But } V_{R2} = 9I_2 + 10.5jI_2 = 6I_3 + (-\frac{25}{3}jI_3)$$

$$\text{So } 45 \angle 30^\circ = 6I_1 + 18jI_1 + 9I_2 + 10.5jI_2 \quad (2)$$

$$45 \angle 30^\circ = 6I_1 + 18jI_1 + 6I_3 + (-\frac{25}{3}jI_3) \quad (3) \quad \text{current one}$$

$$I_1 = I_2 + I_3 \quad (1)$$