

BT.12

$$U_{AB} = V_A - V_B \dots (1)$$

$$V_A = U \cdot \frac{\frac{1}{j\omega C}}{R + \frac{1}{j\omega C}} = U \cdot \frac{1}{j\omega CR + 1} \dots (2)$$

$$V_B = U \cdot \frac{R}{R + j\omega L} \dots (3)$$

(2) & (3) ins. in (1)  $\rightarrow$

$$U_{AB} = U \cdot \frac{1}{j\omega CR + 1} - U \cdot \frac{R}{R + j\omega L} =$$

$$= U \left\{ \frac{R + j\omega L - j\omega CR^2 - R}{(j\omega CR + 1)(R + j\omega L)} \right\} =$$

$$= U \left\{ \frac{j\omega(L - CR^2)}{(R - \omega^2 CLR) + j\omega(CR^2 - L)} \right\}$$

$$\rightarrow U_{AB} = \dots = 10\sqrt{2} \left\{ \frac{j9}{9 + j11} \right\} =$$

$$= \dots = 10\sqrt{2} \left\{ \frac{9 \cdot e^{j90^\circ}}{14.21 \cdot e^{j50.7^\circ}} \right\} =$$

$$\approx 6.3\sqrt{2} e^{j39.3^\circ} \quad \text{V}$$

$$u_{AB}(t) = 6.3\sqrt{2} \sin(1000t + 39.3^\circ) \quad \text{V}$$