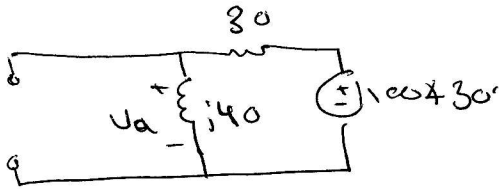


chap 8

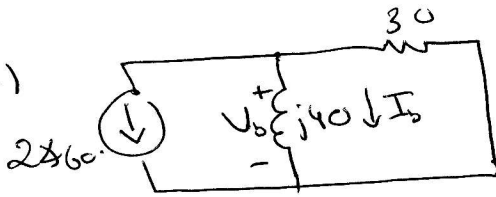
43. 1)



$$U_a = \left( \frac{-j40}{30 + j40} \right) (100 \angle 30^\circ)$$

$$= \underline{80 \angle 67^\circ} \text{ V}$$

2)



$$I_b = - \left( \frac{30}{30 + j40} \right) (2 \angle 60^\circ)$$

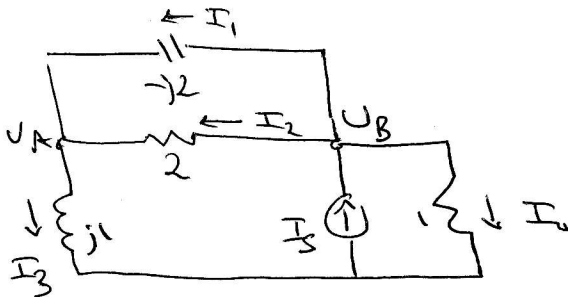
$$= 1.2 \angle -173^\circ$$

$$U_b = 48 \angle -83^\circ$$

$$\therefore U_0 = U_a + U_b$$

$$= \underline{45.3 \angle 35^\circ}$$

45.



$$I_1 = \frac{4}{-j2} \quad I_2 = \frac{4}{2}$$

$$= 2 \angle 90^\circ \quad = 2$$

$$I_3 = I_1 + I_2 = 2 + 2j$$

$$I_0 = I_3 + I_2$$

and from  $I_1 + I_2 = I_3$ 

$$\frac{U_B - U_A}{-j2} + \frac{U_B - U_A}{2} = \frac{U_A}{j1}$$

$$\dots (1 + j1)U_A + (1 - j1)U_B = 0 \quad \text{①}$$

$$\text{and} \quad -U_A + U_B = 4 \quad \text{②}$$

$$\text{①} \times (1 - j) \dots$$

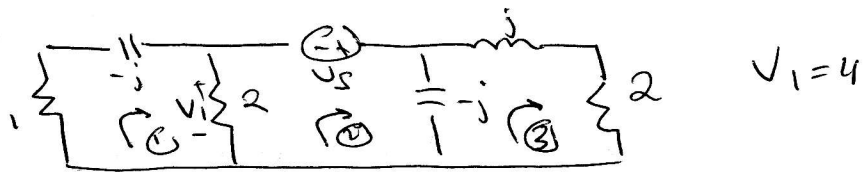
$$2U_A = -4 + 4j$$

$$U_A = 2.8 \angle 135^\circ$$

$$U_B = 2.8 \angle 45^\circ$$

$$\rightarrow I_0 = \frac{2.8 \angle 45^\circ}{1}$$

46.



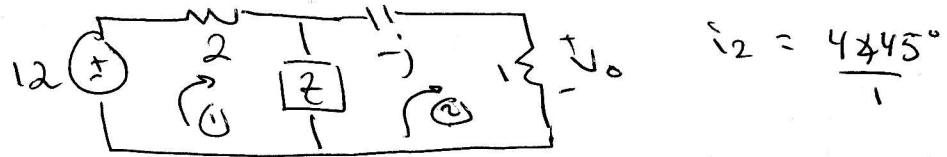
KVL ①  $i_1 - j i_1 + 4 = 0$   
 $i_1 = -2 - 2j$

and  $4 = V_1 = 2(i_1 - i_2)$   
 $i_2 = -4 - 2j$

③  $-j(i_3 - i_2) + j i_3 + 2i_3 = 0$   
 $i_3 = -1 + 2j$

②  $-4 - V_3 + (-j)(i_2 - i_3) = 0$   
 $V_3 = -8 + 3j$   
 $\approx 8.5 \angle 160^\circ$

47.



①  $-12 + 2i_1 + 2(i_1 - i_2) = 0$

②  $2(i_2 - i_1) - j i_2 + 4 \angle 45^\circ = 0$

① + ②  $-12 + 2i_1 - j i_2 + 4 \angle 45^\circ = 0$   
 $i_1 = 3.17 \angle 0^\circ$

in ②:  $Z = \frac{12}{1.9} \angle 83^\circ \Omega$