

Test 2Subject 1

Determine the z -parameters and y -parameters for the two following

Figures!

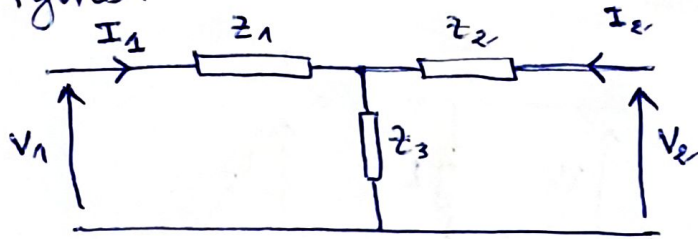


Figure 1

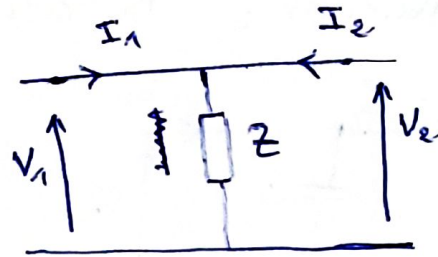
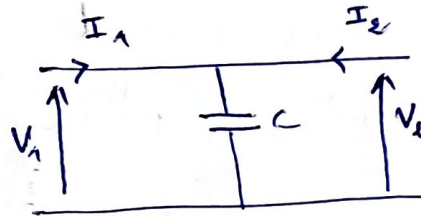
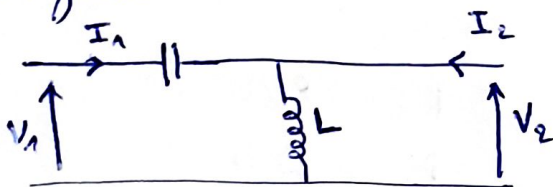


Figure 2

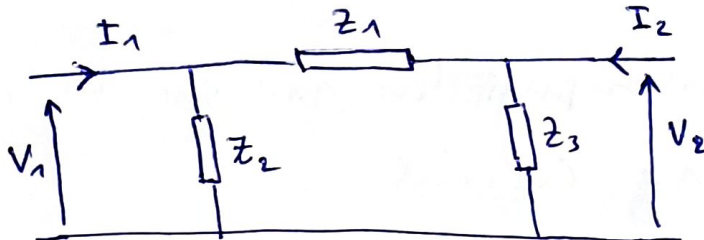
Test 2Subject 2

Determine the z -parameters and y -parameters for the Two following

Figures

Test 2Subject 3

Determine the z -parameters and y -parameters for the following
Figure

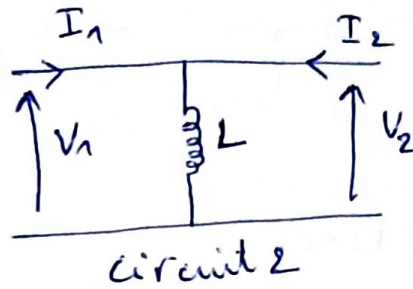
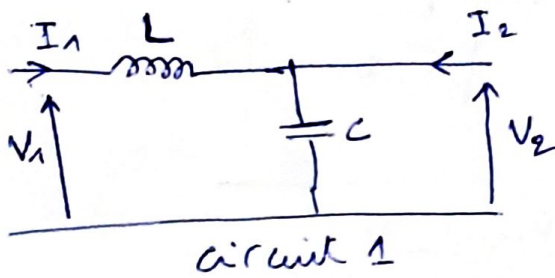


Subject

Test 2

Subject 04

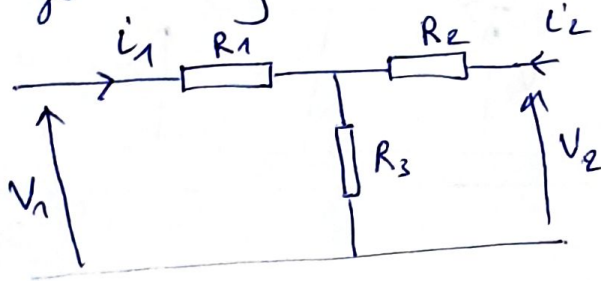
Determine the Z-parameters and H-parameters for the circuit 1.
and y-parameters for the circuit 2



Test 2

Subject 05

Find the transmission parameters and the Hybrid parameters for the following circuits



$$R_1 = 2\Omega$$

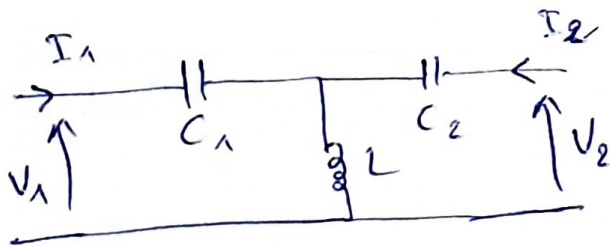
$$R_2 = 6\Omega$$

$$R_3 = 4\Omega$$

Test 2

Subject 06

Find the Transmission parameters and the Hybrid parameters for the following circuit



Solutions of test N°2

Subject 1

Figure 1

$$\left. \begin{array}{l} z_m = (z_1 + z_3) \\ z_{12} = z_3 \end{array} \right\} \begin{array}{l} z_{e1} = z_3 \\ z_{e2} = (z_2 + z_3) \end{array} \quad \text{OIR}$$

$$y_m = \frac{1}{z_1 + (z_3 \parallel z_2)} \quad \text{OIR}$$

$$y_{e1} = -\frac{z_3}{z_1 z_2 + z_1 z_3 + z_2 z_3} \quad \text{OIR}$$

$$y_{12} = -\frac{z_3}{z_1 z_2 + z_1 z_3 + z_2 z_3} \quad \text{OIR}$$

$$y_{e2} = \frac{1}{z_2 + (z_1 \parallel z_3)} \quad \text{OIR}$$

Figure 2

$$z_m = z_{12} = z_{e1} = z_{e2} = z \quad \text{①}$$

The y-parameters doesn't exist, because impossible to express i_1 and i_2 as a function of V_1 and V_2 OIR

Subject 2

Figure 1

$$\left. \begin{array}{l} z_m = z_c + z_L = \frac{1}{j\omega} + jL\omega \\ z_{12} = z_L = jL\omega \\ z_{e1} = z_L = jL\omega \\ z_{e2} = z_L = jL\omega \end{array} \right\} \quad \text{① OIR}$$

$$y_m = \frac{1}{z_c} = j\omega$$

$$y_{12} = -\frac{1}{z_c} = -j\omega$$

$$y_{e1} = -\frac{1}{z_c} = -j\omega$$

$$y_{e2} = \frac{1}{z_c \parallel z_L} = \frac{z_c + z_L}{z_c \cdot z_L} \quad \text{② OIR}$$

Figure 2

$$z_m = z_{12} = z_{e1} = z_{e2} = z_c = \frac{1}{j\omega} \quad \text{①}$$

The y-parameters doesn't exist, because impossible to express i_1 and i_2 as a function of V_1 and V_2 OIR

Subject 3

$$z_{11} = z_2 \cdot \frac{(z_1 + z_3)}{(z_1 + z_2 + z_3)} \quad (0,1)$$

$$z_{21} = z_3 \cdot \frac{z_2}{z_1 + z_2 + z_3} \quad (0,1)$$

$$z_{12} = z_2 \cdot \frac{z_3}{z_1 + z_2 + z_3} \quad (0,1)$$

$$z_{22} = z_3 \cdot \frac{(z_1 + z_2)}{(z_1 + z_2 + z_3)} \quad (0,1)$$

$$y_{11} = \frac{z_1 + z_2}{z_1 \cdot z_2} \quad (0,1)$$

$$y_{12} = -\frac{1}{z_1} \quad (0,1)$$

$$y_{21} = -\frac{1}{z_1} \quad (0,1)$$

$$y_{22} = \frac{z_1 + z_3}{z_1 \cdot z_3} \quad (0,1)$$

Subject 4

Figure 1

$$z_{11} = z_c + z_L = j\omega L + \frac{1}{j\omega C} \quad (0,1)$$

$$z_{12} = \frac{1}{j\omega C} = z_c \quad (0,1)$$

$$z_{21} = \frac{1}{j\omega C} = z_c \quad (0,1)$$

$$z_{22} = \frac{1}{j\omega C} = z_c \quad (0,1)$$

$$H_{11} = z_L = j\omega L \quad (0,1)$$

$$H_{12} = 1 \quad (0,1)$$

$$H_{21} = -1 \quad (0,1)$$

$$H_{22} = \frac{1}{z_c} = j\omega C \quad (0,1)$$

Figure 2

The y-parameters doesn't exist. (1)

Subject 5

$$A = \frac{R_1 + R_3}{R_3} = \frac{3}{2} \quad (0,1)$$

$$B = \frac{R_1(R_3 + R_2) + R_2 R_3}{R_3} = 1 \quad (0,1)$$

$$C = \frac{1}{R_3} = \frac{1}{4} = 0,25 \text{ S} \quad (0,1)$$

$$D = \frac{R_2 + R_3}{R_3} = 2,5 \quad (0,1)$$

$$h_{11} = \frac{R_2 \cdot R_3}{R_2 + R_3} + R_1 = 4,4 \Omega \quad (0,1)$$

$$h_{12} = \frac{R_3}{R_2 + R_3} = 0,4 \quad (0,1)$$

$$h_{21} = -\frac{R_3}{R_2 + R_3} = -0,4 \quad (0,1)$$

$$h_{22} = \frac{1}{R_2 + R_3} = 0,15 \quad (0,1)$$

Subject 6

$$A = \frac{z_{c1} + z_L}{z_L} \quad (0,75)$$

$$B = \frac{z_{c1}(z_{c2} + z_L) + z_{c2} z_L}{z_L} \quad (0,75)$$

$$C = \frac{1}{z_L} \quad (0,75)$$

$$D = \frac{z_{c2} + z_L}{z_L} \quad (0,75)$$

$$h_{11} = \frac{z_{c2} \cdot z_L}{z_{c2} + z_L} + z_{c1} \quad (0,75)$$

$$h_{12} = \frac{z_L}{z_{c2} + z_L} \quad (0,75)$$

$$h_{21} = -\frac{z_L}{z_{c2} + z_L} \quad (0,75)$$

$$h_{22} = \frac{1}{z_{c2} + z_L} \quad (0,75)$$

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