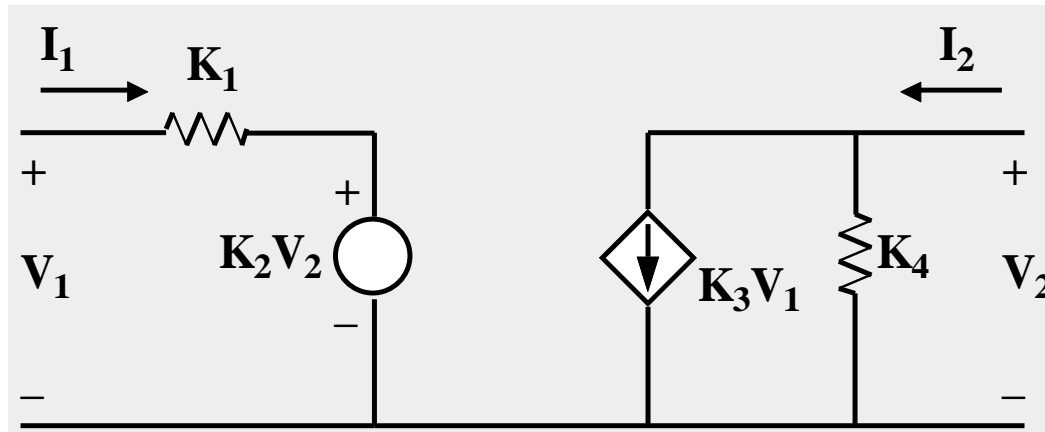


NETWORK ANALYSIS AND SYNTHESIS

Two Port Networks

Hybrid Parameters:

The following is a popular model used to represent a particular variety of transistors.



We can write the following equations:

$$V_1 = AI_1 + BV_2$$

$$I_2 = CI_1 + \frac{V_2}{D}$$

Two Port Networks

Hybrid Parameters:

$$V_1 = AI_1 + BV_2$$

$$I_2 = CI_1 + \frac{V_2}{D}$$

We want to evaluate the H parameters from the above set of equations.

$$h_{11} = \left. \frac{V_1}{I_1} \right|_{V_2=0} = \boxed{}$$

$$h_{12} = \left. \frac{V_1}{V_2} \right|_{I_1=0} = \boxed{}$$

$$h_{21} = \left. \frac{I_2}{I_1} \right|_{V_2=0} = \boxed{}$$

$$h_{22} = \left. \frac{I_2}{V_2} \right|_{I_1=0} = \boxed{}$$

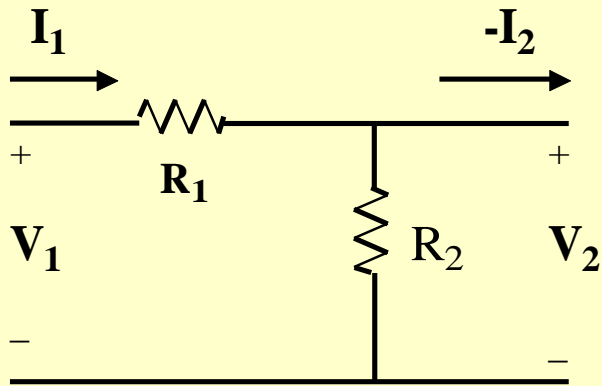


Two Port Networks

Hybrid Parameters:

Another example with hybrid parameters.

Given the circuit below.



The equations for the circuit are:

$$V_1 = (R_1 + R_2)I_1 + R_2I_2$$

$$V_2 = R_2I_1 + R_2I_2$$

The H parameters are as follows.

$$h_{11} = \left. \frac{V_1}{I_1} \right|_{V_2=0} = \boxed{}$$

$$h_{21} = \left. \frac{I_2}{I_1} \right|_{V_2=0} = \boxed{}$$

$$h_{12} = \left. \frac{V_1}{V_2} \right|_{I_1=0} = \boxed{}$$

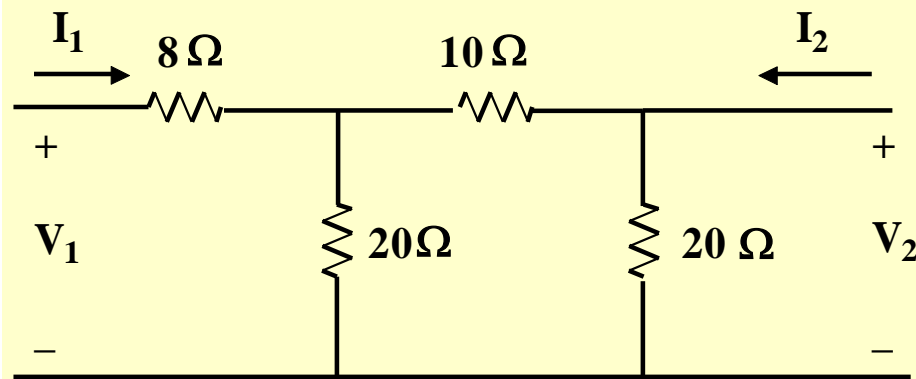
$$h_{22} = \left. \frac{I_2}{V_2} \right|_{I_1=0} = \boxed{}$$



Two Port Networks

Modifying the two port network:

Earlier we found the z parameters of the following network.



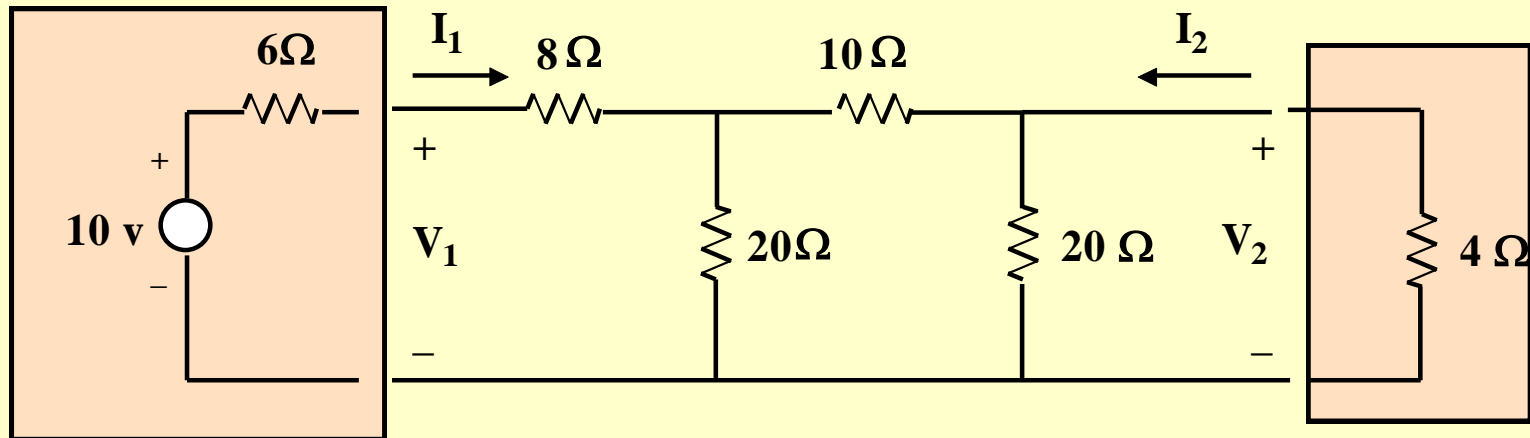
$$\begin{bmatrix} V_1 \\ V_2 \end{bmatrix} = \begin{bmatrix} 20 & 8 \\ 8 & 12 \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \end{bmatrix}$$

* notes

Two Port Networks

Modifying the two port network:

We modify the network as shown by adding elements outside the two ports



We now have:

$$V_1 = 10 - 6I_1$$

$$V_2 = -4I_2$$

THANKS....

Queries Please...