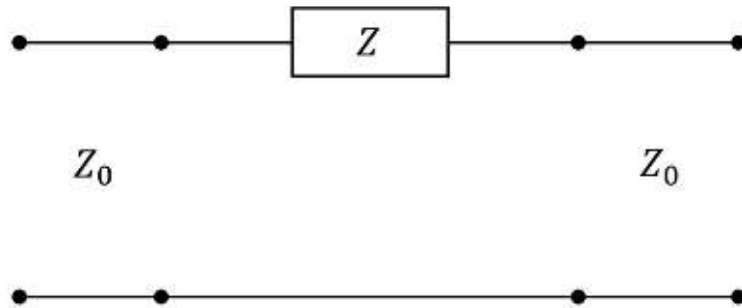


1 Practice Problems



Practice Problem 1

- Find the scattering parameter matrix of the following network.

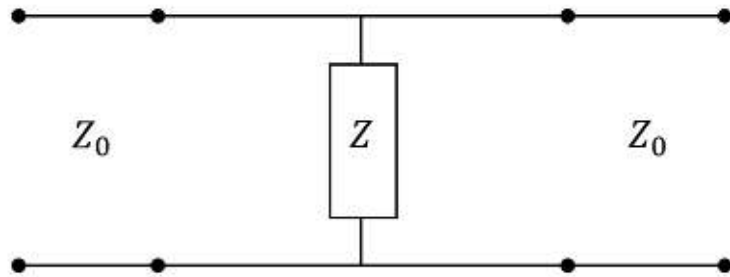


$$S_{11} = \left. \frac{V_1^-}{V_1^+} \right|_{z=0} \quad S_{21} = \left. \frac{V_2^-}{V_1^+} \right|_{z=0}$$

$$S_{12} = \left. \frac{V_1^-}{V_2^+} \right|_{z=0} \quad S_{22} = \left. \frac{V_2^-}{V_2^+} \right|_{z=0}$$

Practice Problem 2

2. Find the scattering parameter matrix of the following network.

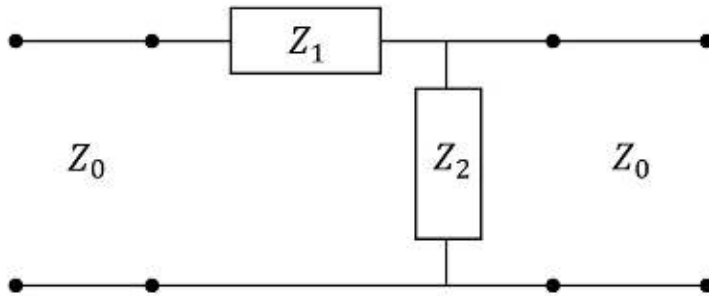


$$S_{11} = \left. \frac{V_1^-}{V_1^+} \right|_{z=0} \quad S_{21} = \left. \frac{V_2^-}{V_1^+} \right|_{z=0}$$

$$S_{12} = \left. \frac{V_1^-}{V_2^+} \right|_{z=0} \quad S_{22} = \left. \frac{V_2^-}{V_2^+} \right|_{z=0}$$

Practice Problem 3

3. Find the scattering parameter matrix of the following network.

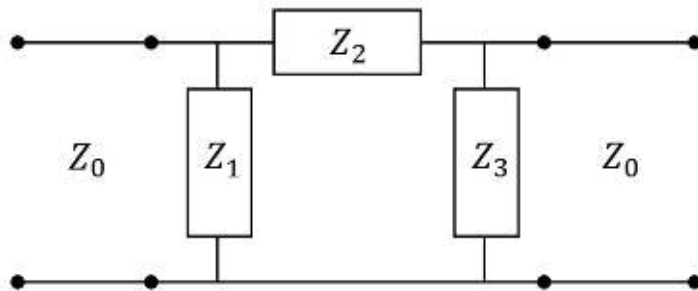


$$S_{11} = \left. \frac{V_1^-}{V_1^+} \right|_{z=0} \quad S_{21} = \left. \frac{V_2^-}{V_1^+} \right|_{z=0}$$

$$S_{12} = \left. \frac{V_1^-}{V_2^+} \right|_{z=0} \quad S_{22} = \left. \frac{V_2^-}{V_2^+} \right|_{z=0}$$

Practice Problem 4

4. Find the scattering parameter matrix of the following network.
Assume $Z_0 = 50\Omega$, $Z_1 = 25\Omega$, $Z_2 = 10\Omega$, $Z_3 = 40\Omega$



$$S_{11} = \left. \frac{V_1^-}{V_1^+} \right|_{z=0} \quad S_{21} = \left. \frac{V_2^-}{V_1^+} \right|_{z=0}$$

$$S_{12} = \left. \frac{V_1^-}{V_2^+} \right|_{z=0} \quad S_{22} = \left. \frac{V_2^-}{V_2^+} \right|_{z=0}$$