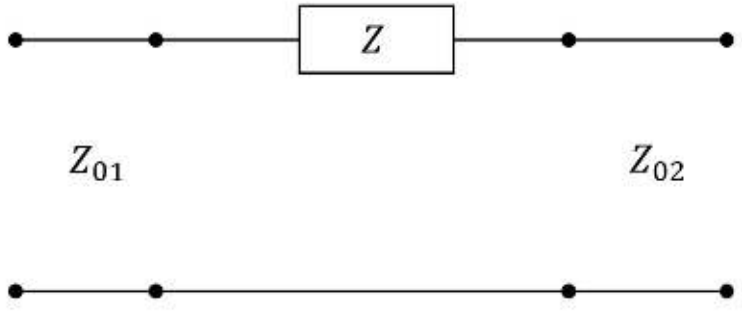
2 Homework Problems

Homework Problem 1

1. Find the scattering parameter matrix of the following network. Assume $Z_{01} = 50\Omega, Z_{02} = 25\Omega, Z = 10\Omega$

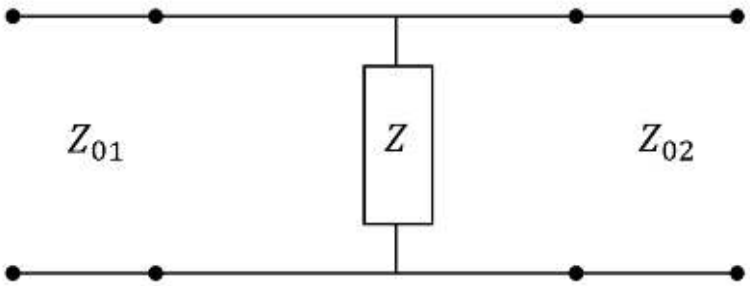


$$S_{11} = \frac{V_1^-}{V_1^+}\Big|_{z=0} \qquad S_{21} = \frac{V_2^-}{V_1^+}\Big|_{z=0}$$

$$S_{12} = \frac{V_1^-}{V_2^+}\Big|_{z=0} \qquad S_{22} = \frac{V_2^-}{V_2^+}\Big|_{z=0}$$

Homework Problem 2

2. Find the scattering parameter matrix of the following network. Assume $Z_{01} = 50\Omega, Z_{02} = 25\Omega, Z = 10\Omega$

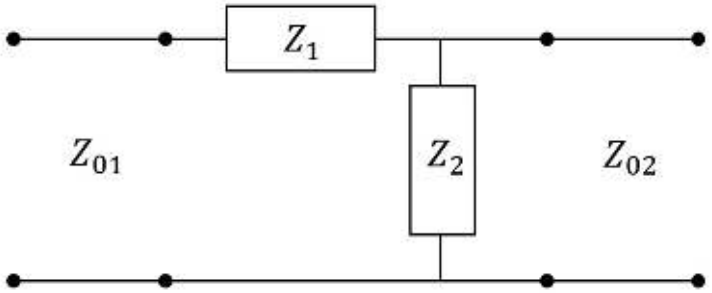


$$S_{11} = \left.\frac{V_1^-}{V_1^+}\right|_{z=0} \qquad S_{21} = \left.\frac{V_2^-}{V_1^+}\right|_{z=0}$$

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

Homework Problem 3

3. Find the scattering parameter matrix of the following network. Assume $Z_{01} = 50\Omega, Z_{02} = 25\Omega, Z_1 = 80\Omega, Z_2 = 120\Omega$

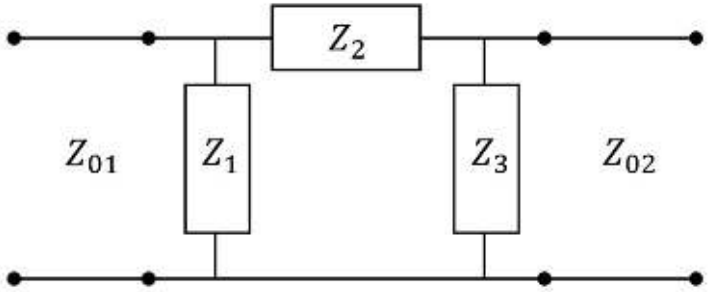


$$S_{11} = \left.\frac{V_1^-}{V_1^+}\right|_{z=0} \qquad S_{21} = \left.\frac{V_2^-}{V_1^+}\right|_{z=0}$$

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

Homework Problem 4

4. Find the scattering parameter matrix of the following network. Assume $Z_{01} = 50\Omega, Z_{02} = 25\Omega, Z_1 = 25\Omega, Z_2 = 10\Omega, Z_3 = 40\Omega$



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

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