1. Which two-port parameter matrix is used to represent the relationship between input and output currents and voltages in a linear electrical network?

a) ABCD parameters
b) Z parameters
c) Y parameters
d) Hybrid parameters

Answer: b) Z parameters
Explanation: Z parameters, also known as impedance parameters, relate the input and output currents and voltages of a two-port network to the input and output impedances.

2. What do the ABCD parameters represent in a two-port network?

a) Voltage and current relationship
b) Impedance and admittance relationship
c) Power gain and voltage gain
d) Scattering parameters

Answer: a) Voltage and current relationship
Explanation: ABCD parameters describe the relationship between input and output voltages and currents in a two-port network under certain conditions.

3. Which parameter set is most commonly used for analyzing microwave circuits due to its ease of measurement and interpretation?

a) Hybrid parameters
b) Image parameters

c) Z parameters
d) Y parameters

Answer: a) Hybrid parameters
Explanation: Hybrid parameters, also known as h-parameters, are widely used for microwave circuit analysis because they are directly related to the circuit's physical properties.

4. What property do image parameters possess in relation to the original parameters of a two-port network?

a) They are independent
b) They are complementary
c) They are inversely proportional
d) They are identical

Answer: b) They are complementary
Explanation: Image parameters are complementary to the original parameters, meaning they have a reciprocal relationship.

5. In the context of two-port networks, what is reciprocity?

a) The parameters are symmetric
b) The parameters remain unchanged under interchange of ports
c) The parameters are identical to their image parameters
d) The parameters are inversely proportional

Answer: b) The parameters remain unchanged under interchange of ports
Explanation: Reciprocity implies that the parameters of a two-port network remain the same

when the ports are interchanged.

6. Which parameter matrix represents the relationship between input and output admittances in a two-port network?

a) ABCD parameters
b) Z parameters
c) Y parameters
d) Hybrid parameters

Answer: c) Y parameters
Explanation: Y parameters, or admittance parameters, describe the relationship between input and output admittances in a two-port network.

7. How are Z parameters related to Y parameters in a reciprocal network?

a) Z = Y
b) Z = Y^-1
c) Z = -Y
d) Z = Y^T

Answer: b) Z = Y^-1
Explanation: In a reciprocal network, the Z parameters are the inverse of the Y parameters.

8. Which property ensures that the sum of two-port network parameters remains unchanged under interchange of ports?

a) Symmetry

b) Reciprocity
c) Additivity
d) Linearity

Answer: b) Reciprocity
Explanation: Reciprocity ensures that the parameters of a two-port network remain unchanged when the ports are interchanged.

9. What is the relationship between ABCD parameters and hybrid parameters?

a) ABCD = H^-1
b) H = ABCD
c) H = ABCD^-1
d) ABCD = H^T

Answer: c) H = ABCD^-1
Explanation: Hybrid parameters (h-parameters) are the inverse of the ABCD parameters.

10. In a symmetric two-port network, what property do the Z parameters exhibit?

a) Z = Z^T
b) Z = -Z^T
c) Z = Z^-1
d) Z = -Z^-1

Answer: a) Z = Z^T
Explanation: Symmetric two-port networks have Z parameters that are equal to their transpose, indicating symmetry.