IAT2_MWA

1. S parameters are expressed as a ratio of:

○ Voltage and current

○ Impedance at different ports

⦿ Indecent and the reflected voltage waves

○ None of the mentioned

2. The relation between incident voltage matrix , reflected voltage matrix and S matrix for a microwave network:

⦿ [v-] = [s] [v+]

○ [v+] = [s] [v-].

○ [v-] [v] = [s]

○ [s] = [v] [v-].

3. For a one port network , the scattering parameter S_{11} in terms of impedance parameter Z_{11} is:

🔘 (Z11-1)/ (Z11+1)

⚪ (Z11+1)/ (Z11-1)

⚪ (Z11+1) (Z11-1)

⚪ Z11

4. Scattering matrix for a reciprocal network is:

🔘 Symmetric

⚪ Unitary

⚪ Skew symmetric

⚪ Identity matrix

5. S12=0.85-45º and S21=0.85 +45º for a two port network. Then the two port network is:

🔘 Non-reciprocal

⚪ Lossless

⚪ Reciprocal

⚪ Lossy

6. Scattering matrix for a lossless matrix is:

○ Unitary ⦿

○ Symmetric

○ Identity matrix

○ Null matrix

7. The specific element Sij of the scattering matrix can be determined as:

⦿ SIJ= Vi-/Vj+

○ SIJ= Vi+/Vj-

○ S= Vj+/Vi-

○ None of the mentioned

8. The modes of propagation supported by a rectangular wave guide is:

○ TM, TEM, TE modes

⦿ TM, TE

○ TM, TEM

○ TE, TEM

9. For any mode of propagation in a rectangular waveguide, propagation occurs:

◉ Above the cut off frequency

○ Below the cut off frequency

○ Only at the cut-off frequency

○ Depends on the dimension of the waveguide

10. The one below among others is not a type TEM line used in microwave networks:

○ Co-axial wire

○ Micro strip line

○ Strip lines

◉ Surface guide

11. For a reciprocal network, Z matrix is:

○ A unit matrix

○ Null matrix

○ Skew symmetric matrix

◉ Symmetric matrix

12. For a lossless network, the impedance and admittance matrices are:

◯ Real

🔘 Purely imaginary

◯ Complex

◯ Rational

13. The matrix with impedance parameters $Z_{11}=1+j$, $Z_{12}=4+j$, $Z_{22}=1$, $Z21=4+j$ is said to be

🔘 Reciprocal network

◯ Lossless network

◯ Lossy network

◯ None of the mentioned

14. Which mode of propagation is supported by a strip line?

🔘 TEM mode

◯ TM mode

◯ TE mode

◯ None of the mentioned

15. Stripline can be compared to a:

○ Flattened rectangular waveguide

○ Flattened circular waveguide

◉ Flattened co axial cable

○ None of the mentioned

16. If the loss tangent is 0.001 for a stripline operating at 12 GHz with the relative permittivity of the dielectric material being used equal to 2.6, then the conductor loss is:

○ 0.102

◉ 0.202

○ 0.001

○ 0.002

17. If the dielectric material used between the grounded plates of a stripline is 2.2, when the strip line operating at 8 GHz, the wavelength on stripline is:

○ 1.2 cm

◉ 2.52 cm

○ 0.15 cm

○ 3.2 cm

18. Micro strip can be fabricated using:

⦿ Photo lithographic process

◯ Electrochemical process

◯ Mechanical methods

◯ None of the mentioned

19. The mode of propagation in a microstrip line is:

⦿ Quasi TEM mode

◯ TEM mode

◯ TM mode

◯ TE mode

20. The effective di electric constant of a microstrip line is:

◯ Equal to one

◯ Equal to the permittivity of the material

◯ Cannot be predicted

⦿ Lies between 1 and the relative permittivity of the micro strip line

21. Effective dielectric constant of a microstrip is given by:

◉ (∈r + 1)/2 + (∈r-1)/2 * 1/ (√1+12d/w)

○ (∈r+1)/2 + (∈r-1)/2

○ (∈r+1)/2 (1/√1+12d/w)

○ (∈r + 1)/2-(∈r-1)/2

22. For most of the micro strip substrates:

◉ Conductor loss is more significant than di electric loss

○ Di electric loss is more significant than conductor loss

○ Conductor loss is not significant

○ Di-electric loss is less significant

23. The effective dielectric constant ∈r for a microstrip line:

○ Varies with frequency

◉ Independent of frequency

○ It is a constant for a certain material

○ Depends on the material used to make microstrip

24. Power dividers and couplers are _____ microwave components used for power division or power combining.

◉ Passive

○ Active

○ Linear

○ Non-linear

25. If a microwave network is lossless, then S matrix of the microwave network is:

◉ Unitary

○ Symmetric

○ Identity matrix

○ Zero matrix

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