Unit-III

1.The purpose of waveguide coupling is to:

A) Increase attenuation
B) Transfer energy into or out of a waveguide
C) Reduce frequency
D) Generate microwaves

Answer: B) Transfer energy into or out of a waveguide

2. Which coupling method uses a conducting rod inserted into the waveguide?

A) Loop coupling
B) Aperture coupling
C) Probe coupling
D) Ferrite coupling

Answer: C) Probe coupling

3. Probe coupling is primarily used for coupling:

A) Electric field energy
B) Magnetic field energy
C) Thermal energy
D) Mechanical energy

Answer: A) Electric field energy

4. Loop coupling is mainly used for coupling:

A) Electric field
B) Magnetic field
C) Optical field
D) Acoustic field

Answer: B) Magnetic field

5. Aperture coupling transfers energy through:

A) A screw
B) A dielectric slab
C) An opening or hole
D) A ferrite rod

Answer: C) An opening or hole

6. A waveguide window is used for:

A) Observation only
B) Mechanical support and pressure sealing
C) Frequency generation
D) Amplification

Answer: B) Mechanical support and pressure sealing

7. Tuning screws are used to:

A) Increase waveguide size
B) Adjust impedance matching
C) Generate power
D) Measure frequency

Answer: B) Adjust impedance matching

8. Waveguide posts are used for:

A) Impedance tuning
B) Cooling
C) Oscillation generation
D) Radiation

Answer: A) Impedance tuning

9. A matched load absorbs:

A) Part of the incident power
B) All incident power without reflection
C) Only reflected power
D) DC power

Answer: B) All incident power without reflection

10. The reflection coefficient of an ideal matched load is:

A) 1
B) 0.5
C) 0
D) ∞

Answer: C) 0

1. The function of a waveguide attenuator is to:

A) Amplify signals
B) Reduce signal power
C) Generate signals
D) Change frequency

Answer: B) Reduce signal power

12. Resistive card attenuator uses:

A) Ferrite material
B) Dielectric material
C) Resistive sheet
D) Metal post

Answer: C) Resistive sheet

13. A rotary vane attenuator provides:

A) Fixed attenuation
B) Variable attenuation
C) Amplification
D) Isolation

Answer: B) Variable attenuation

14. Rotary vane attenuator works by rotating:

A) A probe
B) A ferrite rod
C) Resistive vane
D) A loop

Answer: C) Resistive vane

15. Attenuation is generally measured in:

A) Volts
B) Watts
C) Decibels
D) Ohms

Answer: C) Decibels

16. A phase shifter changes the:

A) Frequency
B) Amplitude
C) Phase of the signal
D) Power supply

Answer: C) Phase of the signal

17. Dielectric phase shifter uses:

A) Ferrite material
B) Conducting plate
C) Dielectric slab
D) Tuning screw

Answer: C) Dielectric slab

18. Rotary vane phase shifter operates by:

A) Rotating a metallic vane
B) Rotating a dielectric vane
C) Rotating a probe
D) Rotating a ferrite

Answer: B) Rotating a dielectric vane

19. Phase shifters are widely used in:

A) Microwave communication systems
B) Batteries
C) Transformers
D) Generators

Answer: A) Microwave communication systems

20. The unit of phase shift is:

A) Watt
B) Degree
C) Hertz
D) Ohm

Answer: B) Degree

21. E-plane tee is also called:

A) Series tee
B) Shunt tee
C) Magic tee
D) Hybrid tee

Answer: A) Series tee

22. H-plane tee is also called:

A) Series tee
B) Shunt tee
C) Magic tee
D) Hybrid ring

Answer: B) Shunt tee

23. The side arm of an E-plane tee lies in the:

A) H-plane
B) E-plane
C) Z-plane
D) XY-plane

Answer: B) E-plane

24. The side arm of an H-plane tee lies in the:

A) H-plane
B) E-plane
C) XY-plane
D) YZ-plane

Answer: A) H-plane

25. In an E-plane tee, outputs at collinear arms are:

A) In phase
B) 90° out of phase
C) 180° out of phase
D) Random phase

Answer: C) 180° out of phase

26. In an H-plane tee, outputs at collinear arms are:

A) In phase
B) Out of phase

C) 90° phase difference
D) Random

Answer: A) In phase

27. A three-port waveguide junction is called a:

A) Tee junction
B) Coupler
C) Resonator
D) Isolator

Answer: A) Tee junction

28. Ferrites are:

A) Conductors
B) Semiconductor materials
C) Magnetic ceramic materials
D) Dielectrics only

Answer: C) Magnetic ceramic materials

29. Ferrites are made primarily from:

A) Copper oxides
B) Iron oxides
C) Silver oxides
D) Aluminum

Answer: B) Iron oxides

30. Ferrites exhibit:

A) Ferromagnetic properties
B) Superconductivity
C) Piezoelectricity
D) Luminescence

Answer: A) Ferromagnetic properties

31. Ferrites are widely used in microwave devices because of:

A) Low magnetic losses
B) High conductivity
C) High optical gain
D) Mechanical strength

Answer: A) Low magnetic losses

Fill In The Blanks

1. The process of transferring microwave energy into or out of a waveguide is called _____.
   Answer: Coupling
2. Probe coupling is used for coupling the _____ field.
   Answer: Electric
3. Loop coupling is used for coupling the _____ field.
   Answer: Magnetic
4. Aperture coupling transfers energy through an _____.
   Answer: Opening
5. Probe coupling is equivalent to a small _____ antenna.
   Answer: Monopole
6. Loop coupling is equivalent to a small _____ antenna.
   Answer: Loop
7. Aperture coupling is commonly achieved using a small _____ in the waveguide wall.
   Answer: Hole
8. The amount of coupling depends on the size and position of the _____ element.
   Answer: Coupling
9. Probe coupling is generally placed where the electric field is _____.
   Answer: Maximum
10. Loop coupling is placed where the magnetic field is _____.
    Answer: Maximum

11. Waveguide windows are used for pressure _____ between sections.
    Answer: Sealing
12. A waveguide window introduces a _____ discontinuity.
    Answer: Dielectric
13. Tuning screws are used for impedance _____.
    Answer: Matching
14. Tuning posts are metallic _____ inserted into the waveguide.
    Answer: Rods
15. Waveguide posts are used to compensate for _____ effects.
    Answer: Reactive
16. A matched load absorbs all incident microwave _____.
    Answer: Power
17. An ideal matched load produces zero _____.
    Answer: Reflection
18. The reflection coefficient of an ideal matched load is _____.
    Answer: Zero
19. Matched loads are often terminated with a _____ material.
    Answer: Absorbing
20. Waveguide discontinuities affect the _____ characteristics.
    Answer: Impedance

21. A waveguide attenuator is used to reduce signal _____.
    Answer: Power
22. Attenuation is usually measured in _____.
    Answer: Decibels
23. A resistive card attenuator uses a _____ sheet.
    Answer: Resistive

24. Rotary vane attenuators provide _____ attenuation.
    Answer: Variable
25. In a rotary vane attenuator, attenuation is varied by rotating a _____ vane.
    Answer: Resistive
26. Attenuators are used for power level _____.
    Answer: Control
27. Fixed attenuators provide _____ attenuation.
    Answer: Constant
28. Variable attenuators provide adjustable _____.
    Answer: Loss
29. Attenuators should introduce minimum _____ mismatch.
    Answer: Impedance
30. The main function of an attenuator is signal _____.
    Answer: Reduction