



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (OBJECTIVE)

Subject with Code : Microwave Engineering[16EC425]

Course & Branch: B.Tech - ECE

Year & Sem: III B.Tech & II Sem

Regulation: R16

UNIT –I

Microwave Transmission Lines

1. Microwave frequency range is ----- []
 - (a) 1 Khz-100 Khz (b) 1 Mhz-100 Mhz (c) 1 Ghz-1000 Ghz (d) None
2. --- is a Object detection System that uses microwaves []
 - (a) Microwave oven (b) Transmitter (c) Radar (d) Satellite
3. ---- is an electronically controlled home appliance used for cooking []
 - (a) Radar (b) Microwave oven (c) Satellite (d) None
4. In --- Wave Both A & B electric and magnetic fields are purely transverse []
 - (a) TE (b) TM (c) TEM (d) None
5. --- is hollow metallic tube used for Transmitting EM waves []
 - (a) Strip line (b) Micro strip line (c) Waveguide (d) None
6. Minimum possible mode for TM modes is ----- []
 - (a) TM₀₀ (b) TM₀₁ (c) TM₁₀ (d) TM₁₁
7. Minimum possible mode for TE modes is ---- []
 - (a) TE₀₀ (b) TE₀₁ (c) TE₁₀ (d) b & c
8. Waveguide acts as ---- filter []
 - (a) Low pass (b) Band reject (c) Band pass (d) High pass
9. Speed of EM wave in free space is ----- []
 - (a) 3×10^{10} m/s (b) 3×10^{12} cm/s (c) 3×10^{10} cm/s (d) None
10. The mode having highest cut-off wavelength is called as ---- []
 - (a) Dominant mode (b) Degenerate mode (c) Both A & B (d) None
11. The mode having lowest cut-off frequency is called as ---- []
 - (a) Dominant mode (b) Degenerate mode (c) Both A & B (d) None
12. ---- is dominant mode for TM waves in rectangular waveguide []
 - (a) TM₀₀ (b) TM₀₁ (c) TM₁₁ (d) TM₁₁

13. --- is dominant mode for TE waves when $a > b$ in rectangular waveguide []
 (a) TE_{00} (b) TE_{10} (c) TE_{01} (d) TE_{11}
14. The distance travelled by the wave in order to undergo a phase shift of 360° called as-- []
 (a) Phase velocity (b) group velocity (c) guide wavelength (d) None
15. -----is the relation between λ_g and β []
 (a) $\beta = 2\pi\lambda_g$ (b) $\beta = \pi\lambda_g$ (c) $\beta = 2\pi/\lambda_g$ (d) None
16. --- is relation between V_p and β []
 (a) $V_p = w/\beta$ (b) $V_p = w \beta$ (c) $V_p = \beta / w$ (d) None
17. --- is relation between V_g and β []
 (a) $V_g = dw/ d\beta$ (b) $V_g = w/\beta$ (c) $V_g = w\beta$ (d) None
18. Product of Phase velocity and group velocity is --- []
 (a) Square of speed of light (b) Speed of light (c) Speed of sound (d) None
19. Frequency range of voice signal is ----- []
 (a) 0 – 4 KHz (b) 20 – 20 KHz (c) 1 Mhz – 10 Mhz (d) None
20. Frequency range of audio signal is ----- []
 (a) 0 – 4 KHz (b) 20 – 20 KHz (c) 1 Mhz – 10 Mhz (d) None
21. --- theorem used for calculating power transmission and power losses []
 (a) Pointing (b) Thevenin's (c) Norton's (d) None
22. Rectangular waveguide supports ---- waves []
 (a) TE (b) TM (c) TEM (d) TE & TM
23. ----- is a metallic enclose formed by shorting two ends of waveguide []
 (a) Cavity Resonator (b) Amplifier (c) Tank circuit (d) None
24. In cavity resonators, distance between shorting end plates is multiple of --- []
 (a) $\lambda_g/2$ (b) λ_g (c) $\lambda_g/4$ (d) $\lambda_g/3$
25. ---- is a measure of frequency selectivity of resonant or anti resonant circuit []
 (a) Q factor (b) Amplifier (c) Oscillator (d) None
26. ----- is the relation between Q, f_r & BW []
 (a) $BW = f_r \times Q$ (b) $BW = f_r / Q$ (c) $BW = f_r \times Q^2$ (d) None
27. If $f = 600$ Mhz then $\lambda =$ ---- []
 (a) 0.5 m (b) 1 m (c) 2 m (d) None
28. Cavity resonators used in ----- []
 (a) Oscillator (b) filter (c) Both A & B (d) None

29. At low frequencies cavity resonator works similar to ----- []
(a) Low pass (b) High pass (c) Tank circuit (d) None
30. If $\lambda = 1\text{m}$ then $f =$ ---- []
(a) 300 MHz (b) 3×10^8 h (c) Both A & B (d) None
31. In Microwave we take the elements as []
(a) Lumped circuit elements (b) Distributed circuit elements
(c) Both A & B (d) None
32. For handling large microwave power, the best medium is []
(a) Coaxial line (b) Rectangular waveguide
(c) Strip line (d) Circular waveguide
33. Which of the following noise becomes important at microwave frequencies []
(a) Shot noise (b) Flicker noise (c) Thermal noise (d) Transit time noise
34. The phenomenon of microwave signals following the curvature of earth is known as []
(a) Faraday effect (b) Ducting (c) Wave tilt (d) Troposcatter
35. Microwave frequency range extends from []
(a) 3 MHz to 30 MHz (b) 30 MHz to 300 MHz
(c) 300 MHz to 3000 MHz (d) 500 MHz to 30000 MHz
36. Due to curvature of earth, microwave repeaters are placed at a distance of about []
(a) 10 Km (b) 50 Km (c) 150 Km (d) 250 Km
37. At microwave frequencies the size of the antenna becomes []
(a) Very large (b) Large (c) Small (d) Very Small
38. Short term fading in microwave communication links can be overcome by []
(a) Increasing the transmitted power (b) Changing the antenna
(c) Changing the modulation scheme (d) Diversity reception and transmission
39. ---- is a process used for monitoring and controlling the vehicle. []
(a) Radar (b) Modulation (c) Navigation (d) Microwave Oven
40. RADAR is a Object detection System that uses ---- []
(a) Long Waves (b) Medium Waves (c) Short Waves (d) Satellite

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UNIT-II
Waveguide Components And Applications

1. ---- used for producing field intensities in the waveguide []
 (a) Probe (b) loop (c) Both A & B (d) None
2. Probe used for setting ---- field in the waveguide []
 (a) Electric (b) Magnetic (c) Both A & B (d) None
3. loop used for setting ---- field in the waveguide []
 (a) Electric (b) Magnetic (c) Both A & B (d) None
4. For Impedance matching we use ---- []
 (a) Windows (b) Posts (c) Screw (d) All
5. When $h > \lambda_g/4$ post behaves like ----- []
 (a) Capacitevely (b) Pure resistor (c) Inductively (d) None
6. When $h < \lambda_g/4$ Screw behaves like ----- []
 (a) Capacitevely (b) Pure resistor (c) Inductively (d) None
7. ---- used for reducing power of the signal []
 (a) Windows (b) Posts (c) Screw (d) Attenuator
8. In Flap attenuator, resistive card inserted completely in waveguide attenuation is - []
 (a) Minimum (b) Half (c) Maximum (d) None
9. In Vane type attenuator ,when vane at center attenuation is ----- []
 (a) Minimum (b) Half (c) Maximum (d) None
10. Rotary vane attenuator provides ---- attenuation []
 (a) Fixed (b) Variable (c) Half (d) None
11. In dielectric slab phase shifter, when slab placed inside completely phase shift is - []
 (a) Minimum (b) Maximum (c) Zero (d) None
12. H-plane junction also called as ---- junction []
 (a) Parallel (b) Series (c) Both A & B (d) None

13. E-plane junction also called as ---- junction []
(a) Parallel (b) Series (c) Both A & B (d) None
14. Combination of E-plane & H-plane Tee called as ----- []
(a) Magic Tee (b) Hybrid Tee (c) E-H Plane Tee (d) All
15. Directional coupler is ----- port network []
(a) Two (b) Three (c) Four (d) Five
16. - used for sampling small amount of microwave power used for measurement purpose []
(a) Gyrator (b) Isolator (c) Circulator (d) None
17. Coupling loop placed along ---- dimensions of the waveguide []
(a) Narrow (b) Broader (c) Both A & B (d) None
18. ---- used for measuring incident power []
(a) Directional coupler (b) Gyrator (c) Isolator (d) Circulator
19. ----- Is the ratio of incident power to forward power []
(a) Coupling factor (b) Directivity (c) Isolation (d) None
20. --- is the ratio of forward power to back power []
(a) Coupling facto (b) Directivity (c) Isolation (d) None
21. ---- is a compound composed of $\text{MeO.Fe}_2\text{O}_3$ []
(a) Ferrites (b) FET (c) Diode (d) Transistor
22. Ferrites exhibits ----- property []
(a) Non-Reciprocal (b) Reciprocal (c) Modulation (d)None
23. Ferrites resistivity is ----- times greater than metal []
(a) 10^{12} (b) 10^{14} (c) 10^{16} (d) None
24. Gyrator provides ---- phase shift from port 1 to port 2 []
(a) 0^0 (b) 180^0 (c) 90^0 (d) None
25. Gyrator provides ---- phase shift from port 2 to port 1 []
(a) 0^0 (b) 180^0 (c) 90^0 (d) None
26. A magic-Tee is nothing but []
(a) A modification of E-plane tee (b) A modification of H-plane tee
(c) A combination of E-Plane and H-Plane (d) Two E-plane tees connected in parallel
27. For some application circular waveguide may be preferred over rectangular because []
(a) The smaller cross section needed at any frequency (b) Lower attenuation
(c) Freedom from spurious modes (d) Rotation of polarization
28. Indicate which of the following cannot be followed by the word waveguide []
(a) Elliptical (b) Flexible (c) Coaxial (d) Ridged

29. In order to reduce cross sectional dimensions, the waveguide to use is []
(a) Circular (b) Ridged (c) Rectangular (d) Flexible
30. In a directional coupler []
(a) $I = C+D$ (b) $C=I+D$ (c) $D=I+C$ (d) $I=CD$
31. The waveguide tuning component, which is not easily adjustable, is []
(a) Screw (b) Iris (c) Stub (d) Plunger
32. A frequency at which microwave ovens operate is []
(a) 50 μ Hz (b) 2.45 GHz (c) 3.3 GHz (d) 4.5 GHz
33. Aircraft surveillance radars mostly operate in []
(a) C band (b) S band (c) L band (d) X band
34. Which of the following materials are generally preferred for waveguides? []
(a) Cast iron and steel (b) Nonmetallic solids including plastic
(c) High carbon steel and vanadium steel (d) Brass and aluminum
35. A microwave component which is used to interconnect two sections of waveguide is the []
(a) T section (b) Curved section (c) Choke joint (d) Tapered wedge
36. Brass is an alloy of []
(a) Copper & Zinc (b) Copper & Iron (c) Copper & Aluminum (d) Copper & Tin
37. The range of frequencies in the X-band is ---- []
(a) 1-2 Ghz (b) 2-4 Ghz (c) 4-8 Ghz (d) 8-12 Ghz
38. The range of frequencies in the Ku-band is ---- []
(a) 1-2 Ghz (b) 2-4 Ghz (c) 26-40 Ghz (d) 100-120 Ghz
39. Resonant Iris acts as ----- filter []
(a) Low pass (b) High pass (c) Band pass (d) Band reject
40. The following Tee is used in front end of the micro wave receiver []
(a) H-Tee (b) E-Tee (c) Magic Tee (d) None

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UNIT-III
Microwave Tubes

1. If frequency increases ,the inductive reactance will----- []
 (a) Decreases (b) Increases (c) Constant (d) None
2. At high frequencies the I_p is-----with grid voltage []
 (a) Out of phase (b) Inphase (c) Both A & B (d) None
3. The use of proper shielding of tubes minimizes -----losses. []
 (a) Copper losses (b) Radiation Losses (c) Both A & B (d) None
4. The efficiency of two cavity klystron amplifier is ----- []
 (a) 25% (b) 58% (c) 90% (d) 46%
5. The working principle of Klystron amplifier is -----modulation []
 (a) Frequency (b) Amplitude (c) Velocity (d) None
6. Basically reflex klystron is a ----- []
 (a) Amplifier (b) Oscillator (c) Phase shifter (d) None
7. The multi cavity klystron amp can be used for improve----- []
 (a) Gain (b) Frequency (c) Current (d) None
8. ----- is the variable frequency oscillator []
 (a) Two cavity klystron amplifier (b) TWT (c) Reflex klystron (d) None
9. In Reflex klystron the optimum transit time $T=$ ----- []
 (a) $n+3/4$ (b) $n-3/4$ (c) $n+1/4$ (d) None
10. If electron is subjected to +max of RF signal, its velocity ----- []
 (a) Increases (b) Decreases (c) Constant (d) None
11. TWT is ----- band amplifier []
 (a) Broad (b) Narrow (c) Both A & B (d) None
12. In TWT the RF field is ----- []
 (a) Stationary (b) Moving (c) Both A & B (d) None

25. The glass tube of a TWT may be coated with aquatic to []
(a) Help focusing (b) Provide attenuation (c) Improve bunching (d) Increase gain
26. A reflex Klystron functions as []
(a) Microwave oscillator (b) Microwave amplifier (c) Both A & B (d) A high gain cavity
27. The modes in a reflex Klystron []
(a) Give the same frequency but different transit times
(b) Result from excessive transit time across the resonator gap
(c) Are caused by spurious frequency modulation
(d) Are just for theoretical considerations
28. In Microwave we take the elements as []
(a) Lumped circuit elements (b) Distributed circuit elements
(c) Both A & B (d) None of the above
29. Which of the following can be used for amplification of microwave energy? []
(a) Travelling wave tube (b) Magnetron (c) Reflex Klystron (d) Gunn diode
30. The major advantage of TWT over Klystron []
(a) Higher gain (b) Higher frequency (c) Higher output (d) Higher bandwidth
31. Operating frequency of the reflex klystron is as high as []
(a) 70,000 MHz (b) 50,000 MHz (c) 20,000 MHz (d) 10,000 MHz
32. The microwave tube that uses buncher and catcher cavities is []
(a) Klystron (b) Magnetron (c) Reflex klystron (d) Travelling-wave tube
33. ----- is unlikely to be used as a pulsed device []
(a) BWO (b) TWT (c) CFA (d) Multi-cavity klystron
34. Which of the following statement is false? In microwave tubes Transit time will be reduced if []
(a) The electrodes are brought closer together
(b) Multiple or coaxial leads are used
(c) The anode voltage is made larger
(d) The anode current is made larger
35. What is the primary purpose of the helix in a travelling wave tube? []
(a) To reduce noise figure
(b) To prevent the electron beam from spreading in the long tube
(c) To reduce the axial velocity of the RF field
(d) To ensure broadband operation

36. In multicavity Klystron additional cavities are inserted between buncher and catcher cavities to achieve- []
(a).Higher Gain (b).Higher Efficiency (c).Higher Frequency (d).Higher Bandwidth
37. A space between two cavities in two cavity klystron is []
(a).Drift space (b).Free space (c).Running apace (d).Normal space
38. TWT is []
(a).Oscillator (b). Tuned Amplifier (c). Wide band Amplifier
(d).Both A & B amplifier and Oscillator
39. Klystron oscillators are most often used in the frequency range of []
(a). 300 to 3000 MHz (b) 3000 to 30000 MHz (c) 30 to 30000 MHz (d) 10 to 10000 MHz
40. The main benefit of using microwaves is []
(a) Lower-cost equipment (b) Simpler equipment
(c) Greater transmission distances (d) More spectrum space for signals

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UNIT-IV
M-Type Tubes

1. For 8 cavity magnetron-----no of modes will exists. []
 (a) 8 (b) 7 (c) 1 (d) 3
2. For 8 cavity magnetron , $\Phi_v =$ ----- []
 (a)0 (b)45 (c)90 (d)25
3. ----- electrons participating in energy transfer []
 (a) Favoured (b) Unfavoured (c)Both A & B (d) None
4. The bunch of electrons in magnetron is known as ----- []
 (a) Electron clouds (b) Spokes (c) Both A & B (d) None
5. The theoretical efficiency of TWT is ----- []
 (a) 5-20% (b) 50-60% (c) 15-35% (d) 60-80%
6. The theoretical efficiency of Magnetron is ----- []
 (a) 5-20% (b) 40-70% (c) 15-35% (d) 60-80%
7. In magnetron at $\rho = a, d\Phi/dt =$ ----- []
 (a) Zero (b) Maximun (c) Minimum (d) None
8. In magnetron at $\rho = a, dp/dt =$ ----- []
 (a) Zero (b) Maximun (c) Minimum (d) None
9. Solid state devices basically works on the principle of ----- []
 (a) Velocity modulation (b) Negative resistance (c) Positive resistance (d) None
10. The example of negative resistance device is ----- []
 (a) IMPATT (b) TRAPATT (c) Gunn diode (d) None
11. The example of TED is ----- []
 (a) IMPATT (b) TRAPATT (c) Gunn diode (d) None
12. The example of avalanche transit time device is ----- []
 (a) Tunnel diode (b) TRAPATT (c) Gunn diode (d)None

13. Negative resistances devices are called ----- devices []
(a) Passive (b) Active (c) Both A & B (d)None
14. Gunn effect depends on -----theory []
(a) RWH (b) Hall effect (c) Both A & B (d)None
15. The mass of electron is maximum in ----- valley []
(a) Lower (b) Upper (c) Both A & B (d)None
16. The mobility of electron is maximum in ----- valley []
(a) Lower (b) Upper (c) Both A & B (d) None
17. The mass of electron is minimum in ----- valley []
(a) Lower (b) Upper (c) Both A & B (d) None
18. The mobility of electron is minimum in ----- valley []
(a) Lower (b) Upper (c) Both A & B (d) None
19. ----- substance is used for TEDs []
(a) Al (b) Cu (c) GaAs (d) None
20. TEDs operate with ----- electrons []
(a) Warm (b) Hot (c) Both A & B (d) None
21. The parametric amplifier uses ----- for its amplification []
(a) Resistance (b) Non-linear reactance (c) Controllable impedance (d) None
22. IMPATT is ----- device []
(a) TED (b) ATTD (c) Both A & B (d) None
23. ----- uses an axial magnetic field and radial electric field. []
(a) Reflex Klystron (b) Coaxial Magnetron (c) Travelling wave magnetron
(d) CFA-Crossed Field Amplifier
24. The biggest advantage of the TRAPATT diode over the IMPATT diode is its []
(a) Low noise (b) Higher efficiency
(c) Ability to operate at higher frequencies (d) Lesser sensitivity to harmonics
25. A varactor diode may not be useful at microwave frequencies []
(a) For electronic tuning (b) For frequency multiplication
(c) As an oscillator (d) As a parametric amplifier
26. The negative resistance in a tunnel diode []
(a) Is maximum at the peak point of the characteristic
(b) Is available between the peak and valley points
(c) Is maximum at valley point
(d) May be improved by the use of reverse bias

27. Which one of the following is a transferred electron device? []
(a) BARITT diode (b) IMPATT diode (c) Gunn diode (d) Step recovery diode
28. A PIN diode is suitable for use as a []
(a) Microwave switch (b) Microwave mixed diode (c) Microwave detector (d) None
29. The semiconductor diode which can be used in switching circuits at microwave range is []
(a) PIN diode (b) Tunnel diode (c) Varactor diode (d) Gunn diode
30. In π mode operation of magnetron, the spokes due to phase focusing effect rotate at an angular velocity corresponding to []
(a) One pole/cycle (b) Two poles/cycle (c) Four poles/cycle (d) Six poles/cycle
31. For Gunn diodes, gallium arsenide is preferred to silicon because the former []
(a) Has a suitable empty energy band, which silicon does not have
(b) Has a higher ion mobility
(c) Has a lower noise at the highest frequencies
(d) Is capable of handling higher power densities
32. Travelling wave parametric amplifiers are used to []
(a) Provide a greater gain (b) Reduce the number of varactor diodes required
(c) Avoid the need for cooling (d) Provide a greater bandwidth
33. The cavity magnetron use strapping to []
(a) Prevent mode jumping (b) Prevent cathode back heating
(c) Ensure bunching (d) Improve the phase focusing
34. A magnetic field is used in the cavity magnetron to []
(a) Prevent anode current in the absence of oscillations
(b) Ensure that the oscillations r pulsed
(c) Help in focusing the electron beam, thus preventing spreading
(d) Ensure that the electrons will orbit around the cathode
35. The biggest advantage of the trapatt diode over the impatt diode is it's []
(a) Lower noise (b) Higher efficiency
(c) Ability to operate at higher frequency (d) Lesser sensitivity to harmonics
36. One of the following microwave diode is suitable for very low power oscillator only []
(a) Tunnel (b) Avalanche (c) Gunn (d) Impatt
37. The transferred-electron bulk effect occurs in []
(a) Germanium (b) Gallium arsenide (c) Silicon (d) Metal semiconductor junctions

38. The tunnel diode []
- (a) Has a tiny hole through it's centre to facilitate tunnelling
 - (b) Is a point contact diode with a very high reverse resistance?
 - (c) Uses a high doping level to provide a narrow junction
 - (d) Works by quantum tunnelling exhibited by gallium arsenide only
39. A magnetron is used only as []
- (a) Amplifier (b) Oscillator (c) Mixer (d) Frequency multiplier
40. Radar stands for []
- (a)Radio Distance and Ranging (b) Radio Detection and Ranging
 - (c)Radio Direction and Ranging (d) Radio Distance and Range

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UNIT-V

Microwave Measurements

1. ----- is the device that generate mw power []
 (a) Magnetron (b) TWT (c) Reflex klystron (d) None
2. Low power can be measured by using ----- technique []
 (a) Bolometer (b) Galvanometer (c) Watt meter (d) None
3. Thermister is ----- device []
 (a) PTC (b) NTC (c) Both A & B (d) None
4. In baratter the rate of resistance change is ----- []
 (a) $5\Omega/\text{mw}$ (b) $50\Omega/\text{mw}$ (c) $60\Omega/\text{mw}$ (d) None
5. RF substitution method can be used to measure ----- []
 (a) Frequency (b) Power (c) Attenuation (d) VSWR
6. The attenuation can be measured by ----- technique []
 (a) Bolometer (b) Power ratio (c) Slotted line (d) None
7. In impedance measurement ,if v_{\min} shifts left then impedance is ----- []
 (a) Capacitive (b) Inductive (c) Resistive (d) None
8. The range of VSWR is ----- []
 (a) 0-1 (b) $1-\infty$ (c) 1-10 (d) None
9. Double minimum method can be used to measure ----- []
 (a) Impedance (b) Attenuation (c) High VSWR (d) None
10. The quality factor $Q_L =$ ----- []
 (a) $2/\Delta$ (b) $1/\Delta$ (c) $1/2\Delta$ (d) None
11. In wave meter technique, the output power is ----- when $f_{\text{un}} = f_0$ []
 (a) Maximum (b) Minimum (c) Zero (d) None
12. Impedance can be measured using ----- technique []
 (a) Magic tee (b) Slotted line (c) Reflectometer (d) None

13. Reflectometer technique can be used to measure ----- []
(a) Impedance (b) VSWR (c) Both A & B (d) None
14. Magic tee can be used to measure ----- []
(a) Impedance (b) Attenuation (c) Frequency (d) None
15. High VSWR can be measured by ----- technique []
(a) Bolometer (b) Power ratio (c) Double minimum method (d) None
16. In wave meter technique, the wave meter will ----- the power when $f_{un}=f_0$ []
(a) Absorbs (b) Transmits (c) No action (d) None
17. Reflection coefficient $\rho=$ ----- []
(a) P_{in}/P_{ref} (b) $P_{ref}*P_{in}$ (c) P_{ref}/P_{in} (d) None
18. Most of the power measuring microwave devices measure []
(a) Average power (b) Peak power (c) Instantaneous power (d) None
19. HEMT used in microwave circuit is a []
(a) Source (b) High power amplifier (c) Detector (d) Low noise Amplifier
20. In microwave power measurements using bolometer, the principle of working is the variation of []
(a) Inductance with absorption of power (b) Resistance with absorption of power
(c) Capacitance with absorption of power (d) Cavity dimensions with heat generated by the power
21. In Microwave we take the elements as []
(a) Lumped circuit elements (b) Distributed circuit elements (c) Both A & B (d) None
22. For handling large microwave power, the best medium is []
(a) Coaxial line (b) Rectangular waveguide (c) Stripline (d) Circular waveguide
23. Ionosphere preparation is not possible for microwaves because []
(a) Microwaves will be fully absorbed by the ionospheric layers
(b) There will be an abrupt scattering in all directions
(c) Microwave will penetrate through the ionospheric layers
(d) There will be dispersion of microwave energy
24. A waveguide section in a microwave circuit will act as a []
(a) Low-pass filter (b) Band-pass filter (c) High-pass filter (d) Band-reject filter
25. A varactor diode may not be useful at microwave frequencies []
(a) For electronic tuning (b) For frequency multiplication
(c) As an oscillator (d) Parametric amplifier

26. The negative resistance in a tunnel diode []
(a) Is maximum at the peak point of the characteristic
(b) Is available between the peak and valley points
(c) Is maximum at valley point
(d) May be improved by the use of reverse bias
27. A PIN diode is suitable for use as a []
(a) Microwave switch (b) Microwave mixed diode (c) Microwave detector (d) None
28. Due to curvature of earth, microwave repeaters are placed at a distance of about []
(a) 10 Km (b) 50 Km (c) 150 Km (d) 250 Km
29. At microwave frequencies the size of the antenna becomes []
(a) Very large (b) Large (c) Small (d) Very Small
30. Which of the following noise becomes important at microwave frequencies []
(a) Shot noise (b) Flicker noise (c) Thermal noise (d) Transit time noise
31. The phenomenon of microwave signals following the curvature of earth is known as []
(a) Faraday effect (b) Ducting (c) Wave tilt (d) Troposcatter
32. Indicate which of the following cannot be followed by the word waveguide []
(a) Elliptical (b) Flexible (c) Coaxial (d) Ridged
33. For low attenuation best transmission medium is []
(a) Flexible waveguide (b) Ridged waveguide (c) Rectangular waveguide (d) Coaxial line
34. The glass tube of a TWT may be coated with aquadag to []
(a) Help focusing (b) Provide attenuation (c) Improve bunching (d) Increase gain
35. One of the following is not used as a microwave mixer or detector []
(a) Crystal diode (b) Schottky barrier diode (c) Backward diode (d) Pin diode
36. The tunnel diode []
(a) Has a tiny hole through it's center to facilitate tunneling
(b) Is a point contact diode with a very high reverse resistance
(c) Uses a high doping level to provide a narrow junction
(d) Works by quantum tunnelling exhibited by gallium arsenide only
37. A tunnel diode is loosely coupled to it's cavity in order to []
(a) Increase the frequency stability
(b) Increase the available -ve resistance
(c) Facilitating tuning
(d) Allow operation at the high frequency

38. --- is a object detection system that uses microwaves []
(a) Microwave oven (b) Transmitter (c) Radar (d) Satellite
39. ---- is an electronically controlled home appliance used for cooking []
(a) Radar (b) Microwave oven (c) Satellite (d) None
40. Speed of em wave in free space is ----- []
(a) 3×10^{10} m/s (b) 3×10^{12} cm/s (c) 3×10^{10} cm/s (d) None

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