Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: ECC701 and Course Name: Microwave Engineering

Time: 1 hour Max. Marks: 50

=============================================================================

 Note to the students:- All the Questions are compulsory and carry equal marks .

|  |  |
| --- | --- |
| Q1.  | The main advantage of using microwaves for communications is |
| Option A: | Large bandwidth  |
| Option B: | Small bandwidth |
| Option C: | Low power |
| Option D:  | High power  |
|  |  |
| Q2. | The device used to get the measurement of S parameters of n- port micro wave network is:  |
| Option A: | CRO |
| Option B: | Network analyzer |
| Option C: | Circulator |
| Option D: | Attenuator |
|  |  |
| Q3. | A space between two cavities in two cavity klystron is \_\_\_\_\_\_\_ |
| Option A: | Drift space |
| Option B: | Free space |
| Option C: | Running Space |
| Option D: | Normal Space |
|  |  |
| Q4. | Dominant mode is defined as: |
| Option A: | Mode with the lowest cut off frequency |
| Option B: | Mode with the highest cut off frequency |
| Option C: | Any TEM mode is called a dominant mode |
| Option D: | TM mode  |
|  |  |
| Q5. | The biggest advantage of the TRAPATT diode over the IMPATT diode is its |
| Option A: | lower noise  |
| Option B: | higher efficiency |
| Option C: | ability to operator at higher frequencies |
| Option D:  | lesser sensitivity to harmonics  |
|  |  |
| Q6. | Which microwave tube is used in laboratories for generating the Microwave frequencies of low power range |
| Option A: | Two Cavity Klystron |
| Option B: | Reflex Klystron |
| Option C: | Magnetron |
| Option D:  | TWT  |
|  |  |
| Q7.  | A parametric amplifier sometimes uses a circulator to |
| Option A: | allow the antenna to be used simultaneously for transmission and reception |
| Option B: | separate the signal and idler frequencies |
| Option C: | permit more efficient pumping |
| Option D:  | prevent noise feedback  |
|  |  |
| Q8.  | A cavity magnetron employs DC magnetic field to ensure that |
| Option A: | The oscillations are pulsed |
| Option B: | The electrons will orbit around the cathode |
| Option C: | Anode current in the absence of oscillations is prevented |
| Option D:  | Stability  |
|  |  |
| Q9. | The range of the standing wave ratio is |
| Option A: | 0 < S < 1 |
| Option B: | -1 < S < 1 |
| Option C: | 1 < S < ∞ |
| Option D:  | 0 < S < ∞  |
|  |  |
| Q10.  | To fabricate a low frequency circuit using the hybrid microwave IC methodology, the material with \_\_\_\_\_\_\_ is preferred  |
| Option A: | high dielectric constant |
| Option B: | low dielectric constant |
| Option C: | high resistivity |
| Option D:  | low resistivity  |
|  |  |
| Q11.  | \_\_\_\_\_\_\_\_ is a single cavity klystron tube that operates as on oscillator by using a reflector electrode after the cavity |
| Option A: | Backward wave oscillator |
| Option B: | Reflex klystron |
| Option C: | Travelling wave tube |
| Option D:  | Magnetrons  |
|  |  |
| Q12.  | A line has Z0 = 300 Ω. If ZL = 150 Ω, reflection coefficient is |
| Option A: | 0.5 |
| Option B: | 0.3333 |
| Option C: | -0.3333 |
| Option D: | -0.5  |
|  |  |
| Q13. | A backward – wave oscillator is based on the |
| Option A: | Rising sun magnetron |
| Option B: | Coaxial Magnetron |
| Option C: | Crossed field amplifier |
| Option D:  | Travelling wave tube  |
|  |  |
| Q14.  | A CFA has |
| Option A: | Variable number of cavities |
| Option B: | Even number of cavities |
| Option C: | No cavities  |
| Option D:  | Odd Number of cavities  |
|  |  |
| Q15. | Scattering matrix for a reciprocal network is: |
| Option A: | Symmetric |
| Option B: | Unitary |
| Option C: | Skew Symmetric |
| Option D:  | Identity matrix |
|  |  |
| Q16.  | A PIN diode is  |
| Option A: | a metal semiconductor point-contact diode |
| Option B: | a microwave mixer diode |
| Option C: | often used as a microwave detector |
| Option D:  | suitable for use as a microwave switch  |
|  |  |
| Q17. | Which of the following can be used for higher than 3 GHz frequency |
| Option A: | Waveguides  |
| Option B: | Strip line |
| Option C: | Microstrip line |
| Option D: | Slot Line  |
|  |  |
| Q18. | Which of the following has got highest Dielectric constant |
| Option A: | Silicon |
| Option B: | GaAs |
| Option C: | Sapphir |
| Option D:  | InP  |
|  |  |
| Q19.  | The modes of propagation supported by a rectangular wave guide is: |
| Option A: | TM, TEM, TE modes |
| Option B: | TM, TE modes |
| Option C: | TM, TEM modes |
| Option D:  | TE, TEM modes  |
|  |  |
| Q20. | Varactor diodes are operated in \_\_\_\_\_\_\_\_\_ region to achieve maximum efficiency possible |
| Option A: | Cutoff region |
| Option B: | Saturation region |
| Option C: | Reverse saturation region |
| Option D: | Active region  |
|  |  |
| Q21. | A microwave junction is supposed to be matched at all ports in the S matrix |
| Option A: | All the diagonal elements are equal but not zero |
| Option B: | All the diagonal elements are zero |
| Option C: | All the diagonal elements are Complex  |
| Option D:  | Is Hermitian  |
|  |  |
| Q22.  | Which one of the following is transferred electron device |
| Option A: | BARITT diode |
| Option B: | IMPATT diode |
| Option C: | Gunn Diode |
| Option D:  | Step recovery diode  |
|  |  |
| Q23. | Attenuator is used in travelling wave tube is to : |
| Option A: | Help bunching |
| Option B: | Prevent oscillations |
| Option C: | Prevent saturation |
| Option D:  | Increase gain  |
|  |  |
| Q24.  | For the capacitors used in MMICs, the insulating dielectric films used are: |
| Option A: | GaAs |
| Option B: | Titanium |
| Option C: | Air |
| Option D:  | SiO2  |
|  |  |
| Q25. | In a waveguide the energy is propagated by  |
| Option A: | Voltage variations |
| Option B: | Current variations |
| Option C: | Varying magnetic fields |
| Option D:  | Varying magnetic and electric fields  |