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

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

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| Q1. | The velocity factor of a transmission line depends on |
| Option A: | temperature |
| Option B: | skin effect |
| Option C: | relative permittivity of dielectric |
| Option D: | length |
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| Q2. | The effective dielectric constant ∈r for a microstrip line: |
| Option A: | Varies with frequency |
| Option B: | Independent of frequency |
| Option C: | It is a constant for a certain material |
| Option D: | Depends on the material used to make microstrip |
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| Q3. | For series stub matching, the parameter used for matching is: |
| Option A: | Impedance of the transmission line at a point |
| Option B: | Voltage at a point on the transmission line |
| Option C: | Admittance at a point on the transmission line |
| Option D: | Admittance of the load |
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| Q4. | If the normalized admittance at a point on a transmission line to be matched is 1+j1.47. Then the normalized susceptance of the stub used for shunt stub matching is: |
| Option A: | 1Ω |
| Option B: | 1.47 Ω |
| Option C: | -1.47 Ω |
| Option D: | -1Ω |
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| Q5. | If the reflection co efficient of a 2 port network is 0.25 then the return network loss in the network is: |
| Option A: | 12.05 dB |
| Option B: | 0.15 dB |
| Option C: | 20 dB |
| Option D: | 10 dB |
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| Q6. | A “circulator” is a device that: |
| Option A: | rotates signal polarity in a waveguide |
| Option B: | allows a signal to pass in one direction only |
| Option C: | separates signals among various ports |
| Option D: | prevents microwaves from being “trapped” in a waveguide |
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| Q7. | A hollow rectangular waveguide cannot propagate TEM waves because: |
| Option A: | of the existence of only one conductor |
| Option B: | of the losses caused |
| Option C: | It is dependent on the type of the material used |
| Option D: | It is independent on the type of the material used |
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| Q8. | 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: | Mode with the lowest cut off wavelength |
| Q9. | A common application of magnetrons is in |
| Option A: | Radar |
| Option B: | Satellites |
| Option C: | Two-way radio |
| Option D: | TV sets |
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| Q10. | Phase shifters are used in \_\_\_\_\_\_\_ where the antenna beam can be steered in space by electronically controlled phase shifters. |
| Option A: | Phased array antennas |
| Option B: | Dipole array antennas |
| Option C: | Slot antennas |
| Option D: | Patch antennas |
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| Q11. | Which one of the following devices can be used for broadband amplification of microwave energy ? |
| Option A: | Reflex Klystron |
| Option B: | Two cavity klystron |
| Option C: | Magnetron |
| Option D: | Travelling wave tube |
|  |  |
| Q12. | If the instantaneous RF potentials on the two sides of a magnetron cavity are opposite polarity, the operation is in the |
| Option A: | Π mode |
| Option B: | 2 Π mode |
| Option C: | Π/2 mode |
| Option D: | Π/4 mode |
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| Q13. | On which of the following principle does Klystron operates |
| Option A: | Amplitude Modulation |
| Option B: | Frequency Modulation |
| Option C: | Pulse Modulation |
| Option D: | Velocity Modulation |
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| Q14. | The two terms used to describe performance of a directional coupler are |
| Option A: | coupling and directivity |
| Option B: | gain and coupling |
| Option C: | gain and directivity |
| Option D: | gain and isolation |
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| Q15. | Which of the following is the major advantage of Travelling wave tube over Klystron |
| Option A: | Higher gain |
| Option B: | Higher frequency |
| Option C: | Higher Output |
| Option D: | Higher bandwidth |
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| Q16. | Which one of the following is a transferred electron device? |
| Option A: | BARITT Diode |
| Option B: | IMPATT Diode |
| Option C: | TRAPATT Diode |
| Option D: | Gunn Diode |
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| Q17. | HEMT(High Electron Mobility Transistor) used in microwave circuit is a \_\_\_\_\_\_\_\_\_ |
| Option A: | Source |
| Option B: | Detector |
| Option C: | High power amplifier |
| Option D: | Low noise amplifier |
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| Q18. | Which of the following is the biggest advantage of the TRAPATT diode over IMPATT diode |
| Option A: | Low Noise |
| Option B: | High efficiency |
| Option C: | Ability to operate at high frequencies |
| Option D: | Lesser sensitivity to harmonics |
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| Q19. | PIN diode is suitable for use as a \_\_\_\_\_ |
| Option A: | Microwave switch |
| Option B: | Microwave mixed diode |
| Option C: | Microwave detector |
| Option D: | Microwave Rectifier |
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| Q20. | For the measurement of attenuation, method used is \_\_\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Two antenna method |
| Option B: | Y factor method |
| Option C: | RF substitution Method |
| Option D: | Three antenna method |
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| Q21. | The heart of the Frequency Meter is the -------- . |
| Option A: | Isolator |
| Option B: | Resonant cavity |
| Option C: | Phase shifter\_\_\_\_\_\_\_\_\_\_ |
| Option D: | None of these |
| Q22. | Following technique is not used for antenna gain measurement |
| Option A: | Standard antenna |
| Option B: | Two antenna |
| Option C: | Three antenna |
| Option D: | Four Antenna |
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| Q23. | \_\_\_\_\_\_\_\_\_\_ is an important consideration for a hybrid integrated circuit. |
| Option A: | material selection |
| Option B: | processing units |
| Option C: | design complexity |
| Option D: | active sources |
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| Q24. | The resistivity of microwave integrated circuits should be much greater than \_\_\_\_\_\_\_\_\_\_\_\_\_ Ω-cm for good circuit performance |
| Option A: | 100 |
| Option B: | 150 |
| Option C: | 1000 |
| Option D: | 10000 |
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| Q25. | Following materials used in monolithic microwave integrated circuits for bias networks, terminations, and attenuators. |
| Option A: | Dielectric |
| Option B: | Resistive |
| Option C: | Conductor |
| Option D: | Substrate |