Program: BE-Electronics & Telecommunication Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VII

Course Code: ETC 704 and Course Name: Microwave & radar Engineering

Time: 1hour Max. Marks: 50

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**SAMPLE PAPER**

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

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| Q1. | For any mode of propagation in a rectangular waveguide, propagation occurs: |
| Option A: | Above the cut off frequency |
| Option B: | Below the cut off frequency |
| Option C: | Only at the cut-off frequency |
| Option D: | Depends on the dimension of the waveguide |
|  |  |
| Q2. | What microwave component can sample part of the power travelling through the waveguide? |
| Option A: | Directional coupler |
| Option B: | Magic tee |
| Option C: | Circulator |
| Option D: | Re-entrant cavity |
|  |  |
| Q3. | 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: | Any TE mode is called a dominant mode |
|  |  |
| Q4. | 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 |
|  |  |
| Q5. | \_\_\_\_\_\_\_\_\_\_\_\_ is a microwave device in which the frequency of operation is determined by the biasing field strength. |
| Option A: | VTM |
| Option B: | Gyratron |
| Option C: | Helix BWO |
| Option D: | Circulator |
|  |  |
| Q6. | To overcome the very narrow bandwidth in ruby maser, \_\_\_\_\_\_\_ is used. |
| Option A: | Magnetron |
| Option B: | TWT |
| Option C: | IMPATT diode |
| Option D: | Gunn diode |
|  |  |
| Q7. | A major disadvantage of klystron amplifier is: |
| Option A: | Low power gain |
| Option B: | Low bandwidth |
| Option C: | High source power |
| Option D: | Design complexity |
|  |  |
| Q8. | \_\_\_\_\_\_\_\_ 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 |
|  |  |
| Q9. | Reflex klystron is a \_\_\_\_\_\_ |
| Option A: | Amplifier |
| Option B: | Oscillator |
| Option C: | Attenuator |
| Option D: | Filter |
|  |  |
| Q10. | 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 |
|  |  |
| Q11. | Most of the aircraft surveillance Radars operate in |
| Option A: | X-band |
| Option B: | C-band |
| Option C: | L-band |
| Option D: | S-band |
|  |  |
| Q12. | Which of the following diode is used as a detector in a RADAR? |
| Option A: | Gunn Diode |
| Option B: | Schottky diode |
| Option C: | IMPATT diode |
| Option D: | PIN diode |
|  |  |
| Q13. | The term RADAR stands for |
| Option A: | Radio direction and reflection |
| Option B: | Radio waves dispatching and receiving |
| Option C: | Random detection and re-radiation |
| Option D: | Radio detection and ranging |
|  |  |
| Q14. | The best system for tracking a target after it has been acquired is |
| Option A: | helical |
| Option B: | nodding |
| Option C: | conical |
| Option D: | monopulse |
|  |  |
| Q15. | In radar reception, the term retrace' is used in connected with |
| Option A: | Modulator |
| Option B: | Duplexer |
| Option C: | pulse characteristics |
| Option D: | receiver bandwidth |
|  |  |
| Q16. | A major challenge in designing a radiometer is: |
| Option A: | Design complexity |
| Option B: | High cost |
| Option C: | Requirement of highly sensitive receivers |
| Option D: | frequency |
|  |  |
| Q17. | The system bandwidth of a total power radiometer is determined by the: |
| Option A: | RF amplifier |
| Option B: | Local oscillator |
| Option C: | IF filter |
| Option D: | IF amplifier |
|  |  |
| Q18. | The dominant factor affecting the accuracy of the total power radiometer is the variation of \_\_\_\_\_\_\_\_\_\_ |
| Option A: | Gain in the overall system |
| Option B: | The feedback circuit |
| Option C: | Efficiency of the system |
| Option D: | frequency |
|  |  |
| Q19. | \_\_\_\_\_\_\_\_\_ is a device that converts electrons to photons or vice-versa. |
| Option A: | Antenna |
| Option B: | Electron gun |
| Option C: | Photon amplifier |
| Option D: | Microwave tube |
|  |  |
| Q20. | What is the primary function of the Doppler radar? |
| Option A: | Determining true airspeed |
| Option B: | Determining ground speed |
| Option C: | Determining altitude |
| Option D: | Detecting stealth aircraft |
|  |  |
| Q21. | For Gunn diodes, gallium arsenide is preferred to silicon because the former |
| Option A: | Has a suitable empty energy band, which silicon does not have |
| Option B: | Has a higher ion mobility |
| Option C: | Has a lower noise at the highest frequencies |
| Option D: | Is capable of handling higher power densities |
|  |  |
| Q22. | Microwave antenna aperture efficiency depends on |
| Option A: | Feed Pattern |
| Option B: | Antenna Aperture |
| Option C: | Surface losses |
| Option D: | Low side lobe level |
|  |  |
| Q23. | A varactor diode may not be useful at microwave frequencies |
| Option A: | For electronic tuning |
| Option B: | for frequency multiplication |
| Option C: | as an oscillator |
| Option D: | As a parametric amplifier |
|  |  |
| Q24. | In mode operation of magnetron, the spokes due to phase focusing effect rotate at an angular velocity corresponding to |
| Option A: | One pole/cycle |
| Option B: | Two poles/cycle |
| Option C: | Four poles/cycle |
| Option D: | Six poles/cycle |
|  |  |
| Q25. | Which of the following can be used for amplification of microwave energy? |
| Option A: | Travelling wave tube |
| Option B: | Magnetron |
| Option C: | Reflex Klystron |
| Option D: | Gunn diode |