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M.Tech. (ECE) (2018 Batch) (Sem.-1) **RF AND MICROWAVE CIRCUIT DESIGN** Subject Code : MTEC-PE2B-18-2 M.Code : 75178

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES : 1.Attempt any FIVE questions out of EIGHT questions. 2.Each question carries TWELVE marks.

| 1. | a) What is Rat-race junction? | [6] | | | | |
|---|---|-------------------------|--|--|--|--|
| | b) Define matching network. | [6] | | | | |
| 2. | a) What is the basic difference between IMPATT and TRAPATT diodes? | [6] | | | | |
| | b) State the two parameters that describe a directional coupler. Define them. | [6] | | | | |
| 3. | a) Derive the properties of scattering matrix. | [6] | | | | |
| | b) Explain the working operation of Transferred electron devices (TED). | [6] | | | | |
| 4. | a) Derive the S matrix for H plane TEE junction. | [8] | | | | |
| | b) Explain in detail noise figure in an amplifier. | [4] | | | | |
| 5. | Derive an expression for cut off magnetic field for a cylindrical magnetron. | [12] | | | | |
| 6. | a) Describe the losses in microwave devices. | [6] | | | | |
| | b) Explain the working principle of Tunnel diode with performance characteristics. | [6] | | | | |
| 7. | A 50 ohm lossless line connects a matched signal of 100LHz to a load of 100 ohm load power is 100mW. Calculate the voltage reflection coefficient and VSWR of the l | n. The Load. [12] | | | | |
| 8. | Write Short notes on (Any Two) : | [] | | | | |
| | a) Microwave BJTs | [6] | | | | |
| | b) PIN diode | [6] | | | | |
| | c) Broad band amplifier | [6] | | | | |
| NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any | | | | | | |

page of Answer Sheet will lead to UMC against the Student.

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