Reg. No. :

Question Paper Code: 37403

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Seventh Semester

Electronics and Communication Engineering

01UEC703 - MICROWAVE ENGINEERING

(Regulation 2013)

Duration: One hour   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. To couple two waveguides a choke flange may be used

    (a) As it is simpler than any other method of joining

    (b) To help the alignment of the waveguides

    (c) To compensate for discontinuities at the joint

    (d) T increase the bandwidth of the system

2. The waveguide tuning component, which is not easily adjustable is,

    (a) Screw   (b) Iris   (c) Stub   (d) Plunger

3. TRAPATT diode is preferred over IMPATT diode because of

    (a) High η   (b) Less sensitivity to harmonics

    (c)   Lower noise   (d) Ability to operate at higher frequencies

4. Two entities that are combined to form a Magic Tee are

    (a) One H and one E plane tee   (b) One Hand two E plane tees

    (c) Two Hand two plane tees   (d) Two H and one E plane tee

5. The efficiency (η) of the klystron can be calculated as

    (a) $\eta = P_{ac} + P_{dc}$ (b) $\eta = P_{ac} + P_{dc}$ (c) $\eta = P_{ac} - P_{dc}$ (d) $\eta = P_{ac} / P_{dc}$

6. The microwave tube amplifier that uses an axial magnetic field and radial electric field is
   (a) Reflex klystron   (b) CFA
   (c) Coaxial magnetron   (d) Travelling wave magnetron

7. The fabrication of microstrip line is done by
   (a) Photo etching   (b) Printed circuit technique
   (c) Oxidation   (d) Cladding

8. Processing in MMICs is done by
   (a) Ion implantation   (b) Net list generation
   (c) Floor planning   (d) None of the above

9. A loss less line of characteristics impedance Z_0 is terminated in pure reactance of $-jZ_0$ value. VSWR is

   (a) 10   (b) 2   (c) Infinity   (d) 1

10. The reflection coefficient on a line is $0.2\angle 45^0$. The SWR is

    (a) 0.8   (b) 1.1   (c) 1.2   (d) 1.5

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Derive the S- parameter of Magic Tee.   (8)

12. Compare the characteristics of IMPATT, BARITT and TRAPATT diode.   (8)

13. Explain the velocity modulation process and derive the condition at which maximum bunching occurs in two cavity klystron.   (8)

14. Explain in detail with suitable diagrams, the fabrication techniques of a monolithic microwave integrated circuit.   (8)

15. Explain in detail various power measurement techniques.   (8)

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