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MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Microwave Engineering

Sub. Code: 67631/84860/85040

Day and Date: MAY ,21-05-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions: **1. All questions are compulsory**
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks

Q1) Solve following MCQ. **[14]**

i. The modes of propagation supported by a rectangular wave guide is:

A. TM, TEM, TE modes
B. TM, TE modes
C. TM, TEM modes
D. TE, TEM modes

ii. S parameters are expressed as a ratio of:

A. Voltage and current
B. Impedance at different ports
C. Incident and the reflected voltage waves
D. None of the mentioned

iii. A Magic – Tee is nothing but

A. Modification of E- Plane tee
B. Modification of H- Plane tee
C. Combination of E- plane & H- planed
D. Two E- plane tees connected in parallel

iv. Microwave tubes are grouped into two categories depending on the type of:

A. Electron beam field interaction
B. Amplification method
C. Power gain achieved
D. Construction methods

v. What diode does better than varactor in microwave frequencies?

A. step recovery
B. tunnel

C. PIN
D. Gunn

vi. The substrate of an MMIC must be a _____ to accommodate the fabrication of all the type of devices.
A. Semiconductor
B. Insulator
C. Partial conductors
D. Metals operable at high frequencies

vii. Which of the following antenna is obtained by removing a small area of metal from an infinite ground plane?
A. Slot antenna
B. Plane reflector
C. Dipole
D. Yagi-Uda

Q2) Solve any two (7*2=14) **[14]**

a. Explain Excitations of Modes in Rectangular Waveguides **[7]**

b. Explain with neat diagram E and H plane Tee **[7]**

c. Explain construction, working, formation and applegate diagram with reference to reflex Klystron **[7]**

Q3) Solve any two (7*2=14) **[14]**

a. Explain the process of Hybrid IC Fabrication **[7]**

b. Explain working principle of magnetron **[7]**

c. Explain Resistive Materials in MMIC **[7]**

Q4) Solve any two (7*2=14) **[14]**

a. Explain working principle of InP diodes **[7]**

b. With help of block diagram explain measurement of microwave power attenuation **[7]**

c. Explain working principle of Microstrip antennas **[7]**

Q5) Solve any two (7*2=14) **[14]**

a. Explain working principle of PIN diodes **[7]**

b. What is wave meter? Explain in detail its types **[7]**

c. Define and explain antenna gain, directivity and beam width **[7]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (84860) Microwave Engineering Part 4 SEM 8
2] (101) Bachelor of Engineering (67631) RF and Microwave Engineering Part 4 SEM 7
3] (101) Bachelor of Engineering (85040) Microwave Engineering Part 4 SEM 8