

(DEC 413)

B.Tech DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Final Year)

ELECTRONICS & COMMUNICATION Engg.

Paper - III : Microwave Engineering

Time : 3 Hours

Maximum Marks : 75

Answer Question No.1 compulsory

(15)

Answer ONE question from each unit

(4 × 15 = 60)

- 1) a) What are the precautions to be taken while set up microwave bench for measurement of various parameters.
- b) What is GUNN-EFFECT?
- c) What is meant by strapping?
- d) What is the effect of transit time?
- e) Give the applications of Magic tee.
- f) Mention the purpose of slow wave structures used in TWT-amplifier.
- g) Define waveguide.

UNIT - I

- 2) Discuss the limitations of “conventional tubes” at microwave frequencies
- a) Inter electrode capacitance.
- b) Lead Inductance.
- c) Transit time.

OR

- 3) a) What is Magnetron? How it is different in principle of operation from that of BWO.
- b) What is meant by “wheel spoke bunching”. Explain in detail.

UNIT - II

- 4) a) Derive the scattering matrix for shunt or H-plane tee.
b) Explain the functioning of Rotary vane attenuator.

OR

- 5) a) Explain the construction, Operation & applications of Gyrator.
b) Give the properties of S-matrix.

UNIT - III

- 6) a) Discuss in detail the principle of operation of GUNN-Diode according to the two valley model theory & sketch its volt-ampere characteristics.
b) Write short notes on pin diode.

OR

- 7) a) Explain the physical structure & construction of IMPATT diode.
b) Write short notes on crystal detector.

UNIT - IV

- 8) a) Draw the microwave bench setup neatly & explain each block.
b) With the help of Reflectometer explain measurement of impedance.

OR

- 9) a) Describe the techniques of measuring unknown frequency of a micro wave generator.
b) How are microwave measurements different from low frequency measurements.

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