

Code: EC6T3

**III B.Tech-II Semester–Regular/Supplementary Examinations–
March 2020**

**MICROWAVE ENGINEERING
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1.

- a) What are the advantages of microwaves?
- b) What is meant by beam loading in klystron?
- c) Why conventional tubes are not used at microwave frequencies?
- d) List the properties of S-Matrix.
- e) What is need for waveguide bends, twists and corners?
- f) What is meant by Farady rotation?
- g) What is Q Factor of a cavity resonator?
- h) Define negative differential resistivity in Gunn Diodes?
- i) Define Avalanche transit time devices?
- j) What is the function of attenuator in the microwave bench setup?
- k) Draw the schematic block diagram of Microwave bench setup.

PART – B

Answer any *THREE* questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Discuss in detail about the operation of Reflex klystron with neat diagrams and derive expression for output power and efficiency? 8 M
- b) Explain in detail about the construction of cylindrical magnetron and derive an expression for cut off magnetic field? 8 M
3. a) Explain in detail about the construction of Magic Tee and derive its S-Matrix and explain the inferences in detail from S-Matrix? 10 M
- b) Discuss in detail about applications of Magic Tee with neat diagrams? 6 M
4. a) Discuss about the operation of Isolator and Circulator with neat diagrams? 10 M
- b) A 80W power source is connected to input of a Directional coupler with Coupling factor=25dB; Directivity=35dB and insertion loss is 0.5dB. Find the powers at remaining ports? Assume all ports are perfectly matched to the junction. 6 M

5. a) Discuss in detail about the operation of TRAPATT Diode?
8 M
- b) Discuss about the operation of RWH two-valley theory
with suitable diagrams? 8 M
6. a) Discuss in detail about various methods used to measure
Microwave power? 8 M
- b) Explain in detail about unknown impedance measurements
using necessary experimental setup? 8 M