

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024

Subject Code:2171001

Date:04-12-2024

Subject Name: Microwave Engineering

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Discuss the characteristics of TEM, TE and TM Mode. **03**
(b) Explain the losses associated with microwave transmission **04**
(c) Explain the smith chart in detail. **07**
- Q.2** (a) Define: (i) VSWR (ii) Characteristics Impedance (iii) Return Loss. **03**
(b) Explain in brief advantages and application of microwave. **04**
(c) Derive transmission line equations and also derive solution of transmission line equation. **07**
- OR**
- (c) Explain the impedance matching technique using single stub and double stub. **07**
- Q.3** (a) Define different network parameters used for analyzing microwave circuits? **03**
(b) Describe structure of Waveguide corners, Bends and Twists with diagrams. **04**
(c) Explain Magic Tee with its applications. **07**
- OR**
- Q.3** (a) Write short note on PIN diode. **03**
(b) Write short note on Circular waveguide. **04**
(c) Why Scattering parameters are used for higher frequencies? Discuss the properties of S parameters of microwave devices in brief. **07**
- Q.4** (a) Write short note on an Isolator **03**
(b) Explain the role of spectrum analyzer in microwave measurements. **04**
(c) Discuss reflex klystron with suitable diagrams. **07**
- OR**
- Q.4** (a) Explain in brief microwave imaging. **03**
(b) Write a short note on any one Power measurement method at microwave frequency. **04**
(c) Explain in detail working of IMPATT diode. **07**
- Q.5** (a) Explain in brief EMI and EMC issue. **03**
(b) Discuss RF MEMS for microwave components. **04**
(c) Explain Basic Principal of “RADAR” draw and explain the block diagram of RADAR. **07**
- OR**
- Q.5** (a) Discuss the effects of microwave on human body. **03**
(b) Write short note on Microwave Antenna. **04**
(c) Explain Network Analyzer and how different scattering parameters are measured? **07**
