

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - VII EXAMINATION - WINTER 2025

Subject Code: 2171001

Date: 24-11-2025

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.**

	Marks
Q.1 (a) List out various applications of Microwave and briefly explain any two of them.	03
(b) Why TEM mode is not possible in Rectangular Wave guide?	04
(c) What is S- parameter? Discuss the Properties of S- parameter and prove any one with necessary mathematical derivation.	07
Q.2 (a) Define following terms: (a) Return loss (b) Propagation Constant (c) VSWR	03
(b) Explain with merits and demerits of micro strip line	04
(c) What is the importance of impedance matching? Explain single stub matching in brief.	07
OR	
(c) Derive transmission line equations and also derive solution of transmission line equation.	07
Q.3 (a) Describe structure of microwave corners and twistors with diagrams.	03
(b) Explain the waveguide parameters: group and phase velocities, characteristic wave impedance	04
(c) Using S parameter explain properties of magic tee.	07
OR	
(a) Plot the relation between reflection coefficient and VSWR	03
(b) Explain the construction and applications of smith chart	04
(c) Draw and explain E-plane Tee. Derive its S-Matrix	07
Q.4 (a) Define slow wave structure of TWT using any three structures	03
(b) Write short note on isolators.	04
(c) Explain the working of two cavity klystron Amplifier	07
OR	
(a) Explain directional coupler parameters	03

- (b) Explain Tunnel Diode with its applications. 04
- (c) Explain briefly different method of Impedance measurement at microwave frequency 07
- Q.5** (a) Discuss the effects of microwave on human body 03
- (b) Explain the Gunn effect 04
- (c) Explain the working of Magnetron 07
- OR**
- (a) Explain in brief EMI and EMC issue 03
- (b) Explain about Microwave power measurement methods. 04
- (c) Draw and explain the block diagram of simple RADAR system and differentiate between CW and Pulse RADAR system. 07
