

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 2171001

Date: 27/06/2023

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) Define microwave signals and state various advantages of using microwaves.	03
	(b) Explain the concept of mode in microwave transmission and differentiate TEM, TE, and TM modes.	04
	(c) Explain the impedance matching technique using single stub and double stub.	07
Q.2	(a) Briefly state various applications of microwaves.	03
	(b) Define terms: (i) Characteristic impedance (ii) VSWR and (iii) Group velocity (iv) Phase velocity	04
	(c) Write short note on scattering parameters.	07
	OR	
	(c) Write short note on Microstrip line.	07
Q.3	(a) State and explain various losses associated with microwave transmission.	03
	(b) Why TEM mode is not possible in Rectangular Wave guide?	04
	(c) Explain the construction and working of TWT.	07
	OR	
Q.3	(a) Define different network parameters used for analyzing microwave circuits?	03
	(b) Briefly explain process of Radiation Pattern Measurements for Microwave antenna.	04
	(c) Explain in detail Magic Tee and its applications.	07
Q.4	(a) Write a short note on Isolators	03
	(b) Describe any one Power measurement method at microwave frequency.	04
	(c) Write a short note on (i) PIN diodes (ii) Gunn Diodes	07
	OR	
Q.4	(a) Describe in brief Hazards of Microwave on Human body.	03
	(b) Briefly explain (i) Electromagnetic interference (ii) Electromagnetic Compatibility	04
	(c) Draw the block diagram of Network analyzer and discuss in brief.	07

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| Q.5 | (a) | Write a brief note on remote sensing. | 03 |
| | (b) | Briefly explain any one microwave antenna | 04 |
| | (c) | Write a short-note on Microwave Imaging. | 07 |
| OR | | | |
| Q.5 | (a) | What are the different frequency bands used in microwave technology, and what are their corresponding frequency ranges? | 03 |
| | (b) | Explain the working of two cavity klystron Amplifier. | 04 |
| | (c) | Write a short-note on Microwave RADAR system. | 07 |
