Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2025

Subject Code:3171001 Date:16-05-2025

Subject Name:Microwave Theory and Techniques

Time:02:30 PM TO 05:00 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)**	Enumerate microwave frequency bands.	**03**
	(b)	Discuss losses associated with microwave transmission.	**04**
	(c)	Enlist microwave passive components. Explain attenuator and resonator in detail.	**07**
Q.2	**(a)**	What are the effects of microwaves on the human body?	**03**
	(b)	Present frequency measurement techniques at microwave frequencies.	**04**
	(c)	What are scattering parameters? Explain them with one suitable example.	**07**
		OR	
	(c)	Discuss impedance transformation and matching techniques.	**07**
Q.3	**(a)**	Compare circulator and isolator.	**03**
	(b)	Explain the operating principle of the IMPATT diode.	**04**
	(c)	Present analysis of transmission line at microwave frequencies.	**07**
		OR	
Q.3	**(a)**	Describe the directional coupler.	**03**
	(b)	Explain the operating principle of the Gunn diode.	**04**
	(c)	Present analysis of rectangular waveguide.	**07**
Q.4	**(a)**	What magic is presented by the Magic Tee?	**03**
	(b)	Explain the operation of a single cavity klystron tube.	**04**
	(c)	Describe the design procedure for the microwave amplifier with one example.	**07**
		OR	
Q.4	**(a)**	How to measure scattering parameters?	**03**
	(b)	Explain the working of magnetron.	**04**
	(c)	Describe the design procedure for the microwave mixer with one example.	**07**
Q.5	**(a)**	What is RFID? Explain in short.	**03**
	(b)	Write a short note on the applications of microwaves.	**04**
	(c)	Discuss power measurement techniques for microwave signals.	**07**
		OR	
Q.5	**(a)**	What is GPS? Explain in short.	**03**
	(b)	Write a short note on EMI & EMC.	**04**
	(c)	Discuss impedance measurement techniques for microwave signals.	**07**

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