Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2171001 **Date: 29/04/2017**

Subject Name: Microwave Engineering

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.**

Q.1	**(a)**	Explain advantages and applications of microwaves.	**07**
	(b)	Derive equivalent circuit of transmission line and derive basic equations for voltage and current of transmission line.	**07**
Q.2	**(a)**	Sketch rectangular waveguide and circular waveguide. Also compare their dominant mode, advantages and disadvantages.	**07**
	(b)	Give the comparison of waveguide with two wire transmission line.	**07**
		OR	
	(b)	Write short note on Microstrip line.	**07**
Q.3	**(a)**	Why Scattering parameters are used for higher frequencies? Discuss the properties of S parameters of microwave devices in brief.	**07**
	(b)	Explain high frequency limitations of conventional tubes.	**07**
		OR	
Q.3	**(a)**	Explain the construction and working of Two Cavity Klystron. What will happen when additional cavities are inserted between the buncher and catcher cavities?	**07**
	(b)	Draw diagram of E plane tee junction and derive s-parameter matrix for the same.	**07**
Q.4	**(a)**	Describe the construction and working of Magic tee. What are its applications? Explain any one application in detail.	**07**
	(b)	Explain the tunnel diode characteristics with the aid of energy band diagram.	**07**
		OR	
Q.4	**(a)**	Explain Spectrum Analyzer. Also explain how the spectrum of microwave frequency can be measured using Spectrum Analyzer.	**07**
	(b)	Write shot note on TRAPATT diode.	**07**
Q.5	**(a)**	State and explain different steps involved in the fabrication of Monolithic Microwave Integrated Circuit fabrication process in brief.	**07**
	(b)	Explain Electromagnetic Interference and Microwave Imaging.	**07**
		OR	
Q.5	**(a)**	Explain Radar system and Remote sensing system.	**07**
	(b)	A rectangular waveguide has the dimension of 4×3 cms. The frequency of operation is 5 GHz. Find all the possible mode that can propagate through the waveguide.	**07**

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