Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER IV (NEW) – • EXAMINATION – WINTER 2016

Subject Code: 2740503 **Date: 26/10/2016**

Subject Name: MICROWAVE INTEGRATED CIRCUITS

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)**	What is meant by Hybrid technology? Explain the advantage and disadvantage of Hybrid MIC.	**07**
	(b)	What are the differences between the Hybrid and Monolithic MICs.	**07**
Q.2	**(a)**	Give the ideal characteristics of following materials: (i) Dielectric materials (ii) Resistive materials	**07**
	(b)	What distinguishes RF / Microwave packages from low frequency or digital packages? And explain basic circuit design goals.	**07**
		OR	
	(b)	List the advantage of MICs compared to traditional circuits using printed circuit technology.	**07**
Q.3	**(a)**	Explain the fabrication techniques of Monolithic Microwave Integrated Circuits (MMICs).	**07**
	(b)	What do you understand by thick and thin film technologies? And explain any one technology.	**07**
		OR	
Q.3	**(a)**	Explain the narrow band filter using coupler resonator.	**07**
	(b)	Describe the lange coupler.	**07**
Q.4	**(a)**	Describe the small signal equivalent circuit of MESFET (Metal Semiconductor Field Effect Transistors)	**07**
	(b)	Explain the operation HEMT and V/I characteristics.	**07**
		OR	
Q.4	**(a)**	Explain the planner wave guide.	**07**
	(b)	Give the answer of following question in two to three lines (i) What are Hybrid MIC's? In which frequency rang it is used? What is meant by Surface finish capability? (ii) Give the feature of substrate material used in fabrication of MMICs. What is meant by LID packages?	**07**
Q.5	**(a)**	Write method of full wave analysis of microstrip line and explain any one.	**07**
	(b)	Explain microstrip directional coupler with appropriate equation and find the value of Zoe and Zoo, when coupling factor = -10dB.	**07**
		OR	
Q.5	**(a)**	Explain quasi-static line (Microstrip) parameters,(ε_{eff},z_0,w/h ratio)	**07**
	(b)	Explain the working of gunn diode, varactor diode and PIN diode	**07**

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