Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER - IV (NEW) EXAMINATION – SUMMER 2017

Subject Code: 2740503 **Date:03/05/2017**

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 do you understand by thick and thin film technologies? And explain any one technology.	**07**
	(b)	List the advantage of MICs compared to traditional circuits using printed circuit technology.	**07**
Q.2	**(a)**	Explain the Branch line couplers.	**07**
	(b)	Explain fabrication process of MMICS?	**07**
		OR	
	(b)	What are the differences between the Hybrid and Monolithic MICs.	**07**
Q.3	**(a)**	Differentiate distributed elements and lumped elements?	**07**
	(b)	Discuss the various losses in microstrip.	**07**
		OR	
Q.3	**(a)**	Explain the operation HEMT and V/I characteristics.	**07**
	(b)	Write method of full wave analysis of microstrip line and explain any one.	**07**
Q.4	**(a)**	Explain quasi-static line (Microstrip) parameters,(ε_{eff},z_0,w/h ratio)	**07**
	(b)	Explain microstrip directional coupler with appropriate equation and find the value of Zoe and Zoo, when coupling factor = -10dB.	**07**
		OR	
Q.4	**(a)**	Explain the narrow band filter using coupler resonator.	**07**
	(b)	Give the answer of following question in two to three lines (i) What is mean by Periodic branch line coupler? (ii) Write the Disadvantage of coupled line.	**07**
Q.5	**(a)**	What distinguishes RF / Microwave packages from low frequency or digital packages? And explain basic circuit design goals.	**07**
	(b)	Explain the working of gunn diode, varactor diode and PIN diode	**07**
		OR	
Q.5	**(a)**	Describe the small signal equivalent circuit of MESFET (Metal Semiconductor Field Effect Transistors)	**07**
	(b)	Give the ideal characteristics of following materials: (i) Substrate materials (ii) Conductor materials	**07**

****