Seat No.:	Enrolment No.

Subject Code: 2710504

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

Date:09/05/2017

## ME SEMESTER - I EXAMINATION - SUMMER 2017

Tir	•	Name: RF AND MICROWAVE 2:30 p.m. to 05:00 p.m. Total Marks:	<b>70</b>
	1. 2.	Attempt all questions.  Make suitable assumptions wherever necessary.  Figures to the right indicate full marks.	
Q.1	(a)	What is Microwave Integrated Circuit? Explain MMIC in brief with advantages and disadvantages.	07
	<b>(b)</b>	Discuss the importance of T and $\pi$ matching networks.	07
Q.2	(a) (b)	Explain significance of microwave and its application in details.  Derive the following.  (i) Y-Parameters in terms of Z-Parameters.  (ii) Z-Parameters in terms of ABCD-Parameters.	07 07
	<b>(b)</b>	OR Show that Scattering matrix for a reciprocal network is symmetric and for a lossless network is unitary.	07
Q.3	(a)	What is Parametric Amplifier? Write the amplification mechanism of a parametric amplifier.	07
	<b>(b)</b>	Explain the construction and operation of Varactor diode. Draw the equivalent circuit and also explain one of its application  OR	07
Q.3	(a)	What do you understand by Avalanche Transit Time effect? Explain working, construction and application of TRAPATT device.	07
	<b>(b)</b>	Discuss the principle of operation and characteristics of tunnel diode. Draw the equivalent circuit and give its applications.	07
Q.4	(a)	Describe the working of Directional Coupler with the help of two-hole directional coupler. Derive the expression for its scattering matrix.	07
	<b>(b)</b>	Why is a Hybrid Tee referred to as Magic Tee? Explain the operation of magic tee with scattering matrix.	07
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Q.4	(a) (b)	Explain construction and application of circulator. Write short notes on Ferrite Phase Shifter.	07 07
Q.5	(a)	What are the limitations of conventional tubes at microwave? How Klystron amplifier overcome this limitation. Explain its construction and working.	07
	<b>(b)</b>	Explain the measurement of different parameter like Q, Phase shifter and VSWR at microwave.  OR	07
Q.5	(a)	Explain the amplification process in TWT amplifier. Write an advantage of it's over Klystron.	07
	<b>(b)</b>	What are the different techniques used for the measurement of Impedance at Microwave frequency? Explain any one in detail.	07

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