Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II (OLD) – • EXAMINATION – SUMMER 2016

Subject Code: 1724101 **Date:17/05/2016**

Subject Name: RF and Microwave Circuits

Time:10:30 am to 01:00 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 smith chart with required equations.	**07**
	(b)	Define: Reflection coefficient, return loss, SWR, transmission coefficient. Discuss their significance when transmission line is short circuit, open circuit and matched.	**07**
Q.2	**(a)**	Discuss single stub matching with suitable example	**07**
	(b)	Derive the necessary equations for TE mode in a rectangular waveguide	**07**
		OR	
	(b)	Explain microstrip line with equations of effective dielectric constant and characteristic impedance.	**07**
Q.3	**(a)**	Explain Scattering matrix. Derive relation between scattering matrix with impedance matrix.	**07**
	(b)	Explain signal flow graphs with four decomposition rules	**07**
		OR	
Q.3	**(a)**	Derive the equation of Q-factor for short circuited $\lambda/2$ lossy transmission line.	**07**
	(b)	Explain directional couplers with S matrix	**07**
Q.4	**(a)**	Explain power divider in details	**07**
	(b)	Explain quadrature hybrid junction.	**07**
		OR	
Q.4	**(a)**	Explain Ferrite isolator	**07**
	(b)	Explain analysis of infinite periodic structure	**07**
Q.5	**(a)**	Explain filter design by image parameter method	**07**
	(b)	Explain Richard's transformation for filter implementation	**07**
		OR	
Q.5	**(a)**	Explain microwave mixer circuits with suitable example	**07**
	(b)	What do u mean by microwave oscillator? Explain any one microwave oscillator.	**07**

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