Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VII • EXAMINATION – SUMMER • 2014

Subject Code: X 71101 Date: 28-05-2014

Subject Name: Microwave Engineering

Time: 02:30 pm - 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 the construction, principle of operation and working of two cavity klystron amplifier. What is velocity modulation?	**07**
	(b)	Derive wave equation for TM wave. How it is different from TE waves?	**07**
Q.2	**(a)**	Explain Magnetron Oscillators with the diagram and explain its performance characteristics.	**07**
	(b)	Explain the principle of amplification in TWT? Explain helix TWT structure. How it is different from klystron.	**07**
		OR	
	(b)	Explain E-plane Tee and H-plane Tee. Differentiate between this two.	**07**
Q.3	**(a)**	Describe circular and rectangular waveguide. Compare their dominant mode.	**07**
	(b)	An air filled rectangular waveguide has dimension of 8 cm X 4 cm.It propagates a signal at 2GHz.Compare the following for TE_{10} mode. i>cut-off frequency. ii>Guide wavelength. iii>Phase velocity.	**07**
		OR	
Q.3	**(a)**	What is the use of Parametric Amplifier? Also explain the working principle of it in details.	**07**
	(b)	Describe the construction and working of a reflex klystron	**07**
Q.4	**(a)**	Explain Double Stub matching.	**07**
	(b)	Write short notes on i>Directional coupler and ii>Isolator.	**07**
		OR	
Q.4	**(a)**	How waveguides are different from normal two wire transmission lines. Also discuss similarities.	**07**
	(b)	Write short notes on i>IMPATT Diode & TRAPATT Diode.	**07**
Q.5	**(a)**	Differentiate continuous wave Radar and Doppler Radar. Derive Radar Range equation.	**07**
	(b)	Explain structure and working of PIN diode. What are the applications of PIN diode?	**07**
		OR	
Q.5	**(a)**	Explain MTI Radar with its Block diagram.	**07**
	(b)	Write short notes on 1>Magic Tee, and 2>Circulator.	**07**

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