Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VII • EXAMINATION – WINTER • 2014

Subject Code: X 71101 **Date: 28-11-2014**

Subject Name: Microwave Engineering

Time: 10:30 am - 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 advantages of microwave in detail.	**07**
	(b)	List out the characteristics of the smith chart.	**07**
Q.2	**(a)**	List the similarities and dissimilarities of waveguides with 2-wire transmission lines.	**07**
	(b)	Explain losses due to mismatch in transmission lines in detail.	**07**
		OR	
	(b)	A transmission line has the following parameters: R = 2Ω/m G = 0.5 mmho/m f = 1GHz L = 8nH/m C = 0.23 pF Calculate: (a) the characteristics impedance (b) the propagation constant	**07**
Q.3	**(a)**	List out the advantage, disadvantage and applications of circular waveguide.	**07**
	(b)	Determine the cut-off wavelength for the dominant mode in a rectangular waveguide of breadth 10 cms. For a 2.5 GHz signal propagated in this waveguide in the dominant mode; calculate the guide wavelength, the group and the phase velocities.	**07**
		OR	
Q.3	**(a)**	Explain applications of Magic Tee.	**07**
	(b)	Explain directional coupler in detail.	**07**
Q.4	**(a)**	List the limitations of conventional tube at higher frequency and explain each in brief.	**07**
	(b)	Explain two cavity klystron amplifier in detail.	**07**
		OR	
Q.4	**(a)**	Explain construction, operation and application of TWT.	**07**
	(b)	Explain Tunnel diode in detail.	**07**
Q.5	**(a)**	Explain PIN diode in detail.	**07**
	(b)	Derive the equation of maximum range of radar.	**07**
		OR	
Q.5	**(a)**	Explain Pulse radar in detail.	**07**
	(b)	List the types of display for radar and explain each in detail.	**07**

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