Seat No.:	Enrolment No.
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GUJARAT TECHNOLOGICAL UNIVERSITY PDDC - SEMESTER-VII • EXAMINATION – WINTER 2013

•	Subject Code: X 71101 Date: 03-12-2 Subject Name: Microwave Engineering)13	
· ·		30 am - 01.00 pm Total Marks: 70	0	
instruc	1. A 2. I	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.		
Q.1	(a (b	•	07 07	
Q.2	(2	Explain structure and working of PIN diode. What are the applications of PIN diode?	07	
	(t		07	
OR				
	(ł	Explain impedance matching. What is single stub matching	07	
Q.3	(2	Draw the standing wave patterns for voltage and current along a transmission line when it is terminated with short circuit, open circuit, matched load, inductive load and capacitive load.	07	
	(t	•	07	
		i>The cut off wavelength and the frequency for the TE_{10} , TM_{20} and TM_{11} modes. ii>Find λ_g .		
		OR		
Q.3	(2	Explain the construction, equivalent circuit and application of E-plane Tee. How it is different from H-plane Tee.	07	
	(ł	Write short notes on i>Directional coupler, ii>Quarter wave Transformer	07	
Q.4	(8	rectangular waveguide of breadth 5 cm for a 5 GHz signal propagated in this waveguide in the dominant mode. Find guide wavelength, group	07	
	(b)	velocity and phase velocity. Derive wave equation for TM wave. How waveguides are different from normal two wire transmission lines.	07	
_		OR	. -	
Q.4	(2	i>Explain what is standing wave ratio?	07	
	(lt	ii>Give differentiation between TE and TM wave.	07	

Q.5 (a)		Differentiate continuous wave Radar and Doppler Radar. Derive Radar	07
	(b)	Range equation. Explain MTI Radar with its Block diagram.	07
	` /	OR	
Q.5	(a)		07
		i>What is Maximum Unambiguous Range?	
		ii>A 20 GHz radar has peak transmitted power of 500kw,power gain of antenna is 1500,S _{min} is 10 ⁻¹⁴ watt; cross sectional area of the radar	
		antenna is 10 m ² . If this radar is to be used to detect a target of 2 m ² equivalent cross section, find the maximum range possible.	
	(b)	Write short notes on i>Double stub matching. ii>Magic Tee.	07
