Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC SEMESTER VII– EXAMINATION – SUMMER 2017

Subject Code: X71101 **Date: 27/04/2017**

Subject Name: MICROWAVE ENGINEERING

Time: 02.30PM to 05.00PM **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)**	Define Reflection Coefficient, VSWR, Phase velocity, Group velocity, Guided wavelength, Return loss and Insertion loss.	**07**
	(b)	Draw neat diagram of Microwave system. Also list advantages of microwave and its applications.	**07**
Q.2	**(a)**	Draw equivalent circuit of transmission line and derive basic equations for voltage and current on transmission line. Define characteristic impedance of transmission line.	**07**
	(b)	Define impedance matching and also explain single stub matching.	**07**
		OR	
	(b)	A 700 Ω lossless transmission line is fed by a 50 Ω generator. If the line is 200 m long and terminated by load of 500 Ω, Determine in dB: reflection loss, transmission loss, and return loss.	**07**
Q.3	**(a)**	Derive the solution of TE mode in rectangular waveguide.	**07**
	(b)	Explain the principle of operation and working of Magnetron with neat diagram.	**07**
		OR	
Q.3	**(a)**	Explain Working of reflex klystron. Compare it with two cavity klystron.	**07**
	(b)	Explain directional coupler. Define coupling factor, directivity.	**07**
Q.4	**(a)**	Explain limitation of conventional tubes at Microwave frequencies.	**07**
	(b)	Explain in detail applications of Magic Tee.	**07**
		OR	
Q.4	**(a)**	Explain in detail Gyrator and Isolator.	**07**
	(b)	Explain the solution of H-plane Tee with its s-parameter.	**07**
Q.5	**(a)**	Draw block diagram of pulse radar and explain each block. List different types of display used.	**07**
	(b)	Derive Distributed parameters, characteristic impedance and attenuation losses for parallel strip lines.	**07**
		OR	
Q.5	**(a)**	What do you mean by Doppler effect? Explain operation of MTI radar.	**07**
	(b)	What is Gunn effect? Explain working of GaAs diode.	**07**

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