Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2016

Subject Code:171001 **Date:16/05/2016**

Subject Name:Microwave Engineering

Time:02:30 PM to 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)**	What is the working principle of Radar ? Draw and explain block diagram of Pulse radar. Discuss applications of Radar.	**07**
	(b)	Draw and explain working of a Magic Tee with neat sketch. Write its applications .	**07**
Q.2	**(a)**	Discuss the problems associated to conventional tubes at microwave frequencies. Explain working of two cavity klystron with necessary diagram and waveforms	**07**
	(b)	Derive the equations to determine the maximum range of radar and discuss the factors influencing maximum range of radar.	**07**
		OR	
	(b)	Draw and explain equivalent circuit of a length Δx of a transmission line at microwave frequencies .	**07**
Q.3	**(a)**	Explain construction , characteristic and application of Gunn diode	**07**
	(b)	Explain working of Circulators and isolators with neat sketch.	**07**
		OR	
Q.3	**(a)**	Draw and explain block diagram of MTI radar	**07**
	(b)	Write short notes on: Working of CW Doppler radar	**07**

Q.4	**(a)**	Enumerate the basic advantages of microwave and discuss typical applications of microwave .	**07**
	(b)	Write short notes on: Working and applications of Directional couplers	**07**

OR

Q.4	**(a)**	Explain working of rectangular wave guide with necessary diagram, derivation and waveforms.	**07**
	(b)	Explain working of TRAPATT diode. Write its limitations and applications.	**07**

Q.5	**(a)**	Write advantage of wave guide over co-axial cable and explain working of Circular wave guide with necessary diagram and waveforms	**07**
	(b)	Define following terms: (i) Characteristics impedance (ii) Return loss (iii) VSWR (iv) Wave impedance (v) Phase velocity (vi) Group velocity (vii) Guide wave length	**07**

OR

Q.5	**(a)**	What do you mean by stub? Explain impedance matching by use of stub with necessary circuit, waveforms and derivation	**07**
	(b)	Explain working of PIN diode with necessary circuit and waveforms. Discuss applications of it.	**07**