Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII(NEW) EXAMINATION – SUMMER 2019

Subject Code: 2181103 **Date: 09/05/2019**

Subject Name: Radar & Navigational Aids

Time: 10:30 AM TO 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.**

			MARKS
Q.1	**(a)**	Explain the working principle of Radar and applications.	**03**
	(b)	Derive Radar Range Equation.	**04**
	(c)	Write a short note on GPS.	**07**
Q.2	**(a)**	Briefly explain Radar Cross Section.	**03**
	(b)	Discuss the relation between effective aperture and aperture efficiency of radar antenna	**04**
	(c)	Define the following: (i) Maximum Unambiguous range (ii) Pulse repetition frequency (iii) Collapsing Loss.(iv) Average transmitter Power (v) Blind Speed (vi) Doppler Shift (vii) clutter	**07**
		OR	
	(c)	List the four methods of navigation. Describe any one in detail	**07**
Q.3	**(a)**	Draw the block diagram of MTI radar with Power oscillator transmitter and explain its operation?	**03**
	(b)	What is the need for Coho and Stalo?	**04**
	(c)	Write short note on Instrument landing system.	**07**
		OR	
Q.3	**(a)**	What are the advantages of Electronic Scanning Radar?	**03**
	(b)	Explain the principle and operation of FM-CW radar in brief.	**04**
	(c)	What do you mean by VOR? Explain VOR receiving equipment	**07**
Q.4	**(a)**	Explain Synthetic Aperture Radar.	**03**
	(b)	What is DME? Explain the operation of DME inside the aircraft.	**04**
	(c)	What is the principle of TACAN? Explain working of TACAN with the help of simple block diagram.	**07**
		OR	
Q.4	**(a)**	Explain advantages of Adcock Direction Finder over loop antenna	**03**
	(b)	How do tracking and scanning radar differ?	**04**
	(c)	Briefly describe the DECCA receiver with neat sketch.	**07**
Q.5	**(a)**	What is meant by Satellite Constellations?	**03**
	(b)	Briefly explain Loop Antenna.	**04**
	(c)	Name Navigation Satellites of different countries. Explain GAGAN and NAVIC Receiver System.	**07**
		OR	
Q.5	**(a)**	Briefly explain Goniometer.	**03**
	(b)	Write a short note on Sea clutter.	**04**
	(c)	Explain VOR receiving equipment.	**07**

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