

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
	Define the following: (i) Maximum Unambiguous range (ii)	07
	(c) Pulse repetition frequency (iii) Collapsing Loss.(iv) Average transmitter Power (v) Blind Speed (vi) Doppler Shift (vii) clutter	
	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
