Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (OLD) EXAMINATION – WINTER 2018

Subject Code: 181103 **Date: 26/11/2018**

Subject Name: Radar & Navigational Aids

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)**	Define the following parameters: i) False alarm ii) Unambiguous range iii) Radar Cross section iv) Minimum detectable signal	**07**
	(b)	Enlist the important applications of Radar? Also describe Frequency band used for various applications.	**07**
Q.2	**(a)**	Enlist different types of displays used in Radar? Explain any two in detail.	**07**
	(b)	Prove that the amplitude of the direction finding loop antenna is given by $2\pi EAN\lambda(cos\phi)$.	**07**
		OR	
	(b)	Prove that clutter power is inversely proportional to the square of the range.	**07**
Q.3	**(a)**	Describe Second-time-around echoes effect in Radar with necessary waveforms.	**07**
	(b)	Draw and explain block diagram of conical-scan tracking radar.	**07**
		OR	
Q.3	**(a)**	What is Doppler effect? Draw the block diagram of Pulse Doppler Radar. Explain function of each block in detail.	**07**
	(b)	What do you understand by blind speed? How to eliminate it.	**07**
Q.4	**(a)**	Explain MTI radar operation with the help of block diagram. How moving objects are recognized on an A Scope?	**07**
	(b)	Explain the principle of RADAR with the help of block diagram. Explain radar range equation in terms of receiver noise figure, bandwidth and other related parameters.	**07**
		OR	
Q.4	**(a)**	Draw neat block diagram of FMCW radar and enlist its distinguished features.	**07**
	(b)	Explain Global Positioning system.	**07**

Q.5	**(a)**	What is V.O.R? Explain its principle with necessary waveforms and operation of the VOR ground equipment.	**07**
	(b)	Explain working of Microwave landing system (MLS). Also mention its advantage and disadvantage.	**07**

OR

Q.5	**(a)**	Explain the Distance Measuring Equipment in detail.	**07**
	(b)	Explain Principle of Hyperbolic Navigation. Compare the Operation of LORAN-A and LORAN –C.	**07**

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