Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– IV (NEW) EXAMINATION – SUMMER 2017

Subject Code: 2742602 **Date:03/05/2017**

Subject Name: RADAR SIGNAL PROCESSING

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)**	Draw and explain the generic block diagram of pulsed RADAR	**07**
	(b)	Discuss sampling criteria for pulsed radar signal, and explain sampling in the spatial and angle dimensions	**07**
Q.2	**(a)**	Describe various radar signal models.	**07**
	(b)	What is I/Q imbalance? Discuss any one method of digital I/Q.	**07**
		OR	
	(b)	Explain Moving Target Indication. Write figure of merits and limitations.	**07**
Q.3	**(a)**	What is clutter mapping?	**07**
	(b)	Write brief note on Phase Modulated Pulse compression waveforms.	**07**
		OR	
Q.3	**(a)**	Write brief note on dwell-to dwell stagger	**07**
	(b)	Write brief note on Frequency Modulated Pulse compression waveforms.	**07**
Q.4	**(a)**	Explain radar detection as hypothesis testing.	**07**
	(b)	Explain Cell averaging CFAR concept and its reference windows.	**07**
		OR	
Q.4	**(a)**	What do you mean by fluctuating targets? Explain Shnidman's equation for fluctuating targets	**07**
	(b)	What is CFAR? List down different CFAR techniques and explain any one.	**07**
Q.5	**(a)**	Write a brief note on Polar Format Image Formation Algorithm for spotlight SAR.	**07**
	(b)	Write short note on computational issues in STAP.	**07**
		OR	
Q.5	**(a)**	Explain speckle reduction in the images produced by SAR	**07**
	(b)	Explain advanced STAP algorithm.	**07**

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