

GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER IV (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2742602**Date:04/05/2016****Subject Name: Radar Signal Processing****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.

Q.1 (a) Draw and explain the generic block diagram of pulsed Monostatic RADAR. **07**

(b) What are the basic RADAR functions? Explain each of them. **07**

Q.2 (a) Define the following : **07**

1. Resolution
2. Cross range resolution
3. Maximum unambiguous range
4. Clutter
5. Signal to clutter Ratio
6. Jamming
7. Noise Figure

(b) Explain Signal to Noise Ratio concept with respect to Radar Signal Processing. **07**

OR

(b) Derive generalized equation for distributed target forms for point target and volume scattering case by directly considering radar range equation. **07**

Q.3 (a) Write a brief note on I/Q imbalance and offset. **07**

(b) What is Ambiguity Function (AF)? List out the properties of it and prove any one. **07**

OR

Q.3 (a) Derive the SNR of matched filter for the simple pulse. **07**

(b) Discuss any one method of digital I/Q. **07**

Q.4 (a) Write brief note on dwell-to dwell stagger. **07**

(b) Explain radar detection as hypothesis testing. What is Neyman-pearson detection rule? **07**

OR

Q.4 (a) Draw the block diagram of moving target detector system and explain it. **07**

(b) Write note on approximation to the error function. **07**

Q.5 (a) Explain Doppler Beam Sharpening Algorithm. **07**

(b) What is CFAR? List down different CFAR techniques and explain any one. **07**

OR

Q.5 (a) Discuss the Computational issues in STAP. **07**

(b) Write a note on “Advanced STAP Algorithms and Analysis”. **07**
