

R15

Code No: 128EA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech IV Year II Semester Examinations, May - 2019****RADAR SYSTEMS****(Electronics and Communication Engineering)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**(25 Marks)**

- 1.a) What is maximum Unambiguous range? [2]
- b) List the applications of radar. [3]
- c) What is Doppler effect? [2]
- d) List the applications of CW radar [3]
- e) What is need of delay line canceller [2]
- f) What is blind speeds? [3]
- g) Mention the types of tracking [2]
- h) What is meant by tracking in range? [3]
- i) What is matched filter? [2]
- j) List the types of radar receivers. [3]

PART - B**(50 Marks)**

- 2.a) Draw and explain the simple radar system with a neat block diagram. [5+5]
 - b) Derive the radar range equation. [5+5]
- OR**
- 3.a) Explain the significance Radar cross section in range equation. [5+5]
 - b) Derive an equation for probability of false alarm. [5+5]
4. Write a note on the following:
a) FM-CW altimeter b) CW radar. [5+5]
- OR**
- 5.a) Explain the working principle of multiple frequency CW radar. [5+5]
 - b) What are the bandwidth requirements for a receiver? [5+5]
- 6.a) Explain the working principle and function of each block of power amplifier transmitter in MTI Radar? [5+5]
 - b) Explain the function of pulse Doppler radar and how it is different from simple pulse radar? [5+5]
- OR**
- 7.a) What is an A-scope display? How it generates butterfly effect in MTI Radar system? [5+5]
 - b) Explain the limitations of MTI Radar. [5+5]

- 8.a) Briefly explain the various tracking techniques of radar.
b) Explain the working of one-coordinate amplitude comparison mono pulse radar. [5+5]

OR

- 9.a) Explain the function of sequential lobe tracking.
b) Explain the working of phase comparison mono pulse radar. [5+5]

- 10.a) Explain the function of Balanced duplexer.
b) Explain the designing criteria of a Matched filter receiver. [5+5]

OR

- 11.a) Derive the effective noise temperature of N-antenna system.
b) Explain the working principle of Branch –type duplexer. [5+5]

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