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.	
b)	Derive the radar range equation.	[5+5]
	OR	
3.a)	Explain the significance Radar cross section in range equation.	
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.	
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?	
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?	
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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