R13

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)	List the applications of Radar.	[2]
b)	Discuss in brief about Pulse Repetition Frequency(PRF) and range ambiguities.	[3]
c)	List the characteristics of FM-CW Radar.	[2]
d)	Give the principle of Doppler effect.	[3]
e)	What is Staggered PRF?	[2]
f)	Explain the operation of MTI Radar.	[3]
g)	Explain about sequential lobing.	[2]
h)	Give the principle of operation of conical scan.	[3]
i)	What are the different types of antennas used in Radar?	[2]
j)	Draw the block diagram of cross correlation receiver.	[3]

PART - B

(50 Marks)

2.a) Obtain the Radar equation in terms of minimum detectable power and gains of transmitting and receiving antenna?
 b) Explain about integration of Radar pulses in detail.   [5+5]

OR

3.a) Calculate the minimum pulse interval and pulse repetition frequency required for Radar to detect unambiguous targets up to a range of 125miles?
 b) Explain the terms integration loss and Radar cross section of a target.   [5+5]

4.a) Explain range and Doppler measurement in FM-CW Radar.
 b) What is the major limitation of CW Radar and how it can be overcome?   [5+5]

OR

5.a) Explain the principle of operation of FM-CW Radar with using side band super heterodyne Receiver.
 b) Briefly discuss the FM-CW altimeter.   [5+5]

6.a) Give the principle operation of MTI Radar and pulse Doppler Radar.
  b) List and explain MTI Radar Parameters.   [5+5]

OR

7.a) With the aid of the block diagram, explain fully operation of an MTI system using a power amplifier in the transmitter?
  b) How moving target is distinguish from stationary target?   [5+5]

8.a) Differentiate single -delay-line canceller and double-delay-line canceller.
  b) Explain the concept of conical scan.   [5+5]

OR

9.   Describe different Radar tracking techniques.   [10]

10.a) Discuss Matched filter receiver and derive Matched filter characteristics.
  b) Distinguish series feeds and parallel feeds.   [5+5]

OR

11. List and explain the applications, advantages and limitations of phased array antennas.
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