

ITE - sem - V - 012 - EXTC

RADAR

19/12/15

QP Code : 2125

(OLD COURSE)

(3 Hours)

[ Total Marks :100]

- N.B. :** (1) Questions No. 1 is compulsory.  
(2) Attempt any four out of remaining six questions.  
(3) Support your Answers with neat sketches/ Diagrams  
(4) Assume suitable data wherever necessary.

1. (a) Losses in Radar 5  
(b) Applications of Radar 5  
(c) Dapple Shift and its rule in C W Radar 5  
(d) Conical scan. 5
2. (a) Derive the radar range equation as governed by  $\lambda$  <sup>minimum</sup> detectable signal to noise ratio. Enumerate system losses. 10  
(b) What do you understand by the terms duty cycle and un-ambiguous range of a radar? Explain the technique for range ambiguity. 10
3. (a) What do you understand by the term clutter? Explain different types of radar Clutter enumerate properties of Sea and Land Dutter 10  
(b) What is the drawback in simple CW. Radar. How it is overcome in CW-IF Radar? Draw and explain CW-IF Radar in detail. 10
4. (a) Draw the functions block diagram of an MTI. Radar System and explain its operation. 10  
Define the terms blind speed and MTI- improvement factor.  
(b) Describe the chief characteristics of the radar echo from a target when its cross-section is in the 10  
(i) Rayleigh region  
(ii) Resonance region  
(iii) In the optical region
5. (a) Explain the effect of noise in radar receiver's performance. Describe noise of figure and noise temperature. 10  
(b) State the factors which influence the bandwidth of a receiver write down the advantages of large bandwidth. 10

[ TURN OVER ]

QP-Con. 12022-15.

QP Code : 2125

2

6. (a) Draw the block diagram of monopulse tracking radar and explain its principle of operation with suitable sketches.
- (b) What is the functions of duplexer? Explain any two types of duplexers with necessary diagram.
7. Write short notes on the following (any four)
- (a) PRF and range ambiguities
  - (b) Phased Array Antennas
  - (c) Angel echoes. CW (CW)
  - (d) Multiple freq. CW Radar
  - (e) Pulsed Radar, -block diagram and working.
- 

QP-Con. 12022-15.

MUPD15025 ANJUMAN-I-SLAM'S KALSEKAR TECHNICAL CAMPUS, COLLEGE OF ENGINEERING, NEW PANVEL 19-12-2015 13:48:14