

Con. 3283-07.

(REVISED COURSE)

ND-1528

(3 Hours)

[Total Marks : 100

- N.B. : (1) Question No. 1 is compulsory.
 (2) Attempt any four questions out of remaining six questions.
 (3) Figures to the right indicate full marks.

1. (a) Explain remote sensing radar in brief. 5
 (b) What do you understand by the term four point tracking ? 5
 (c) Explain in brief the various system losses in the radar. 5
 (d) Explain in brief radar resolution cell. 5
2. (a) Describe the chief characteristics of the radar echo from a target when its radar cross-section is in the (i) Rayleigh region; (ii) Resonance region and (iii) in the optical region. 10
 (i) Explain the methods for the integration of radar pulses to improve detection. Define the term integration improvement factor. How does this factor affect the radar range equation ? 10
3. (a) What do you mean by RCS fluctuations ? Explain different Swerling's model for RCS fluctuations. 10
 (b) What is the drawback in simple CW radar ? How is it overcome in CW-IF radar ? Draw and explain CW-IF radar in detail. 10
4. (a) Explain the function of single delay line canceller and derive an expression for the frequency response function. How is the drawback of clutter attenuation problem overcome by double line canceller ? 10
 (b) Draw the functional block diagram of an MTI radar system and explain its operation. Define the terms blind speed and MTI improvement factor. 10
5. (a) With a suitable block diagram explain the working of a conical scan tracking radar. Explain the various factors that need to be considered in determining the optimum squint angle. 10
 (b) State the factors which influence the bandwidth of radar receiver. Write down the advantages of large B. W. 10
6. (a) Explain the limitations of ILS and how the same have been overcome in the MLS ? 10
 (b) Explain the principle of operation of Hyperbolic Navigation system. Compare the principle of operation of Loran A and Loran C. 10
7. Write short notes on the following :-
 (a) Phased array radar 5
 (b) TACAN 5
 (c) VHF omnirange (VOR) 5
 (d) MFCW radar. 5