Printed Pages : 3

EEC035

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID :131855

Roll No.

B.Tech

(SEM. VIII) THEORY EXAMINATION 2014-15
INTRODUCTION TO RADAR SYSTEMS

Time : **3** Hours]   [Total Marks : **100**

Note: Attempt all the questions. Each question carries equal marks.

1   Attempt any **four** parts of the following :   5x4=20

    (a)   What are the basic functions of Radar?

    (b)   Derive radar range equation.

    (c)   What is Doppler Effect and how it is useful in long distance communication.

    (d)   Write short notes on PRF and its significance.

    (e)   Define radar cross-section. Describe briefly some of the factors governing the relation between the radar cross-section of a target and its true cross-section

    (f)   Show that the maximum range of radar operating at a given frequency is proportional to the linear dimension of antenna.

131855]   1   [Contd...

2 Attempt any **four** parts of the following :   5x4=20

a) Draw the block diagram and explain the operation of CW radar using zero intermediate frequency in the receiver.

b) How have the draw backs of the radar been overcome?

c) Explain what is meant by the term BLIND SPEED in MTI radar. Under what condition could this be an embarrassment?

d) What is the method of overcoming the problems of blind speed in radar?

e) If two MTI radar system are operating at same prf but with different operating frequencies with second in blind speed of one radar is equal to fourth blind speed of the other radar, then find the ratio of their operating frequency.

f) Describe Matched filter for pulse burst waveform.

3 Attempt any **two** parts of the following :   10x2=20

a) What do you understand by Tracking with radar? Explain Mono pulse - tracking in detail.

b) Describe with aid of sketch, the conical scanning method of tracking an acquired target.how is the improvement over Lobe switching?

c) What do you mean by Acquisition of a Target and explain the various method of antenna scanning.

4 Attempt any **two** parts of the following :   10x2=20

a) What do you understand by Coherent, Non coherent and Binary integration? Discuss non coherent integration of non-fluctuating Targets.

b) What are the different types of detection used in Radar? Explain zero-crossing detector with diagram.

c) Write a short note on detection of signal in noise.

5 Attempt any **two** parts of the following :   10x2=20

a) Explain the following terms:
   i. Range Measurement
   ii. Range Accuracy
   iii. Range Ambiguity
   iv. Range Rate

b) What do you mean by Radar clutter? Explain various type of radar clutters. How they affect the performance of radar?

c) What is Ambiguity Function? Discuss the Ambiguity function of a simple pulse.

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