

B.TECH.**THEORY EXAMINATION (SEM–VIII) 2016-17****INTRODUCTION TO RADAR SYSTEM****Time : 3 Hours****Max. Marks : 100****Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.****SECTION – A****1. Explain the following:****10 x 2 = 20**

- (a) What do you mean by maximum unambiguous range?
- (b) What are the applications of radar?
- (c) What is called a missed detection?
- (d) Define MTI improvement factor?
- (e) What is stalo and coho?
- (f) What is Doppler Effect and how it is useful in long distance communication?
- (g) Write the advantage of Digital MTI radar over analog MTI radar?
- (h) Define blind speed?
- (i) What are the various types of radar tracking system?
- (j) What are the limitations that affect the accuracy of tracking radar?

SECTION – B**2. Attempt any five parts of the following questions:****5 x 10 = 50**

- (a) Derive the Range equation for target detection by the Radar
- (b) Explain the concept of radar cross-section of targets
- (c) Draw the block diagram and explain the operation of CW radar using zero intermediate frequency in the receiver?
- (d) Explain digital MTI Doppler signal processor?
- (e) Explain Conical Scan and its merits over lobe switching?
- (f) What is ambiguity function ? Discuss the ambiguity function of a simple pulse.?
- (g) Write short note on accuracy of Radar measurement?
- (h) Derive an expression for probability of false alarm?

SECTION – C**Attempt any two parts of the following questions:****2 x 15 = 30**

- 3 Describe the various types of delay lines used in MTI radar. Explain the frequency response.
- 4 What do you mean by coherent, non-coherent and binary integration? Discuss non-coherent integration of nonfluctuating targets ?
- 5
 - (i) Show that the maximum range of Radar operating at a given frequency is proportional to the linear dimension of the antenna?
 - (ii) Describe the various antenna parameters?