

- (b) Explain Sonar Transducers with proper diagrams. 7
8. (a) Explain various propagation modes of Sonar Communication. 7
- (b) What are the basic types of noise in Sonar System ? 8

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**B. Tech. EXAMINATION, Dec. 2018**

(Eighth Semester)

(B. Scheme) (Re-appear Only)

(ECE)

ECE414B

**RADAR AND SONAR ENGINEERING**

*Time : 3 Hours]*

*[Maximum Marks : 75*

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Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

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**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

### Unit I

1. (a) Explain the working principle of a Radar System. Also draw and explain the block diagram of a Radar System. **10**  
(b) Name and explain any *five* system losses that affect the performance of Radar System. **5**
2. (a) Explain the concept of pulse repetition frequency used in Radar System and explain how is it related to the concept of range ambiguities. **10**  
(b) What are the major effects of propagation on radar performance ? Explain. **5**

### Unit II

3. Explain the concept of MTI from a moving platform and explain the two main methods for compensating for platform motion. **15**

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4. (a) What are the advantages of using digital MTI processing ? Also draw and explain each block of a digital MTI doppler signal processor. **10**  
(b) Name all the factors causing degradation in performance of MTI radars. Explain any *one* of them. **5**

### Unit III

5. Write a detailed note on canonical scan with proper diagrams. **15**
6. (a) What is Receiver Noise Figure and Noise Temperature in Radar System. **8**  
(b) Write a brief note on Radar Displays. **7**

### Unit IV

7. (a) What is detection criterion in detection of acoustic energy using Sonar ? **8**

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P.T.O.