

**B.Tech. (ECE) 7th Semester, Professional Elective-V  
(G-Scheme) Examination, December-2022  
RADAR AND SONAR ENGINEERING  
Paper-PEC-ECE-414 G**

*Time allowed : 3 hours] [Maximum marks : 75*

*Note: Question no. 1 is compulsory and attempt any one question from each unit.*

1. Write short notes on the following: 15
- (a) Radar
  - (b) CW
  - (c) MTI
  - (d) Noise figure

**Unit-I**

2. (a) What do you understand by Radar system. 8  
(b) Explain the working principle of Radar system. 7
3. (a) Explain various Frequencies band used in Radar system. 8  
(b) Describe Evolution of Radar technology. 7

**Unit-II**

4. (a) Derive simple form of Radar Range Equation. 10  
(b) Explain Signal to Noise Ratio. 5

5. Explain basic block diagram of CW and FMCW Radar. 15

### Unit-III

6. Explain block diagram of MTI Radar system and its limitations. 15
7. (a) Describe Non Coherent MTI Radar. 5  
(b) Describe Tracking in Radar system. 10

### Unit-IV

8. (a) Explain Sonar system and its types and its applications in detail. 15
9. (a) Describe Duplexer in detail. 8  
(b) Explain Receiver protector in detail. 7