

Code No: RT41048

R13**Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February - 2019

RADAR SYSTEMS**(Electronics and Communication Engineering)**

Time: 3 hours

Max. Marks: 70

*Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B*

PART-A (22 Marks)

1. a) Draw the radar waveform if duty cycle is 20% and $f=1\text{GHz}$, P_{avg} is 5watts. [4]
- b) List various losses in radar system. [4]
- c) Discuss about transversal filters. [4]
- d) Explain about helical scan and palmer scan. [4]
- e) Define phase shifter? List out the types of phase shifters. [3]
- f) List out the series-fed techniques and limitations in each technique. [3]

PART-B (3x16 = 48 Marks)

2. a) Explain the differences between human eye and radar system. [8]
- b) Derive the equation of false-alarm time? And prove that $T_{\text{fa}}=1/B$. [8]
3. a) Explain the need of Isolation between transmitter and receiver. [8]
- b) Explain the working of FM-CW altimeter. [8]
4. a) Explain the working principle of range-gated doppler filter. [8]
- b) Explain the limitations in MTI performance. [8]
5. a) Explain the function of Cosecant-squared antenna with a neat diagram. [8]
- b) Explain the various types of Radome antennas used for radar system. [8]
6. a) Explain the designing criteria of a Matched filter. [8]
- b) List out and explain the applications of the array in the radar. [8]
7. Explain the function:
(a) Balanced duplexer
(b) Types of feeds. [16]