

Code No: R41044

R10**Set No. 1****IV B.Tech I Semester Supplementary Examinations, March/April - 2016****RADAR SYSTEMS****(Electronics and Communication Engineering)****Time: 3 hours****Max. Marks: 75****Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Classify the radars based on frequency. [5]
 b) A radar mounted on an automobile is to be used to determine the distance to a vehicle traveling directly in front of it. The radar operates at a frequency of 9375 MHz with a pulse width 10ns. The maximum range is to be 500 ft.
 i) What is the pulse repetition frequency?
 ii) What is the range resolution (meters)?
 iii) If the antenna dimensions were 1ft by 1ft and the antenna efficiency were 0.6, What would be the antenna gain(dB)? [10]
- 2 a) With suitable example, explain the selection of threshold value in Threshold detection technique. [8]
 b) Explain in detail antenna losses in system losses. [7]
- 3 a) With a suitable diagram explain the working principle of simple CW radar And simple pulse radar to extract ' f_d ' from a moving target? [10]
 b) Define the blind speed and suggest the methods for reducing blind speed effects? [5]
- 4 a) Explain the working principle of power oscillator transmitter? [8]
 b) Derive the expression for the ratio v_1/v_b , where v_1 is the first blind speed of a staggered prf with N different prfs, and v_b is the first blind speed obtained with a constant prf waveform equal to the average of the N staggered prfs. b) What is the ratio v_1/v_B when $N=4$ and the prfs are related as 30:35:32:36? [7]
- 5 a) Classify the tracking techniques. [6]
 b) Explain the working principle of 2 angle coordinate monopulse tracking system. [9]
- 6 Write short notes on i) antenna parameters ii) Radomes [15]
- 7 a) Design a matched filter suitable to radar system. [8]
 b) Prove that the output response of a matched filter is auto correlation function. [7]
- 8 a) Derive the equation of noise figure of N-stage cascaded network. [7]
 b) Describe the technique of series feed and corporate feed with advantages & disadvantages. [8]