Code :R7410404

R7

IV B.Tech I Semester (R07) Supplementary Examinations, May 2011
RADAR SYSTEMS
(Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Derive the Radar range equation and discuss about its limitation.
   (b) A radar operates at a PRE of 100Hz. With a pulse width of 2 micro seconds and at an average power of 100w. Find the peak power and duty cycle.
2. (a) Describe how threshold level for detection is decided in the presence of receiver noise for a specified probability of occurrence of false alarms.
   (b) Describe the effect of pulse repetition frequency on the estimated unambiguous range of radar.
3. (a) Explain with necessary block schematics and analysis, how Doppler direction is identified with CW Radar.
   (b) Explain the Non zero IF receivers with a neat diagram and compare it with zero IF receiver.
4. (a) Explain the method of measurement of distance by using multi frequencies CW radar in missile guidance systems.
   (b) Discuss war and peace time applications of CW radar.
5. (a) What are blind speeds? How to reduce the effect of blind speed for a moving target?
   (b) Calculate the lowest blind speed of an MTI system operating at 4.2 cm wave length and transmitting at a pulse repetition time of 286μ sec.
   (c) What is the need for a delay line canceller?
6. Draw the block diagram of an amplitude comparison mono pulse tracking radar in both azimuth and elevation directions.
7. (a) Explain the principle and process of correlation detection.
   (b) Derive the efficiency of non matched filters.
8. (a) Write short notes on the mixers in the radar receiver.
   (b) Compare series feeds and parallel feeds.

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