

Code: R7410404**R07**

IV B.Tech I Semester (R07) Supplementary Examinations, May 2012

RADAR SYSTEMS

(Electronics & Communication Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. (a) Draw the functional block diagram of simple pulse radar and explain the function of each block.
(b) List the major applications of radar in civil and military systems.
2. (a) Define and explain transmitter power in radar equation and express the radar equation in terms of the energy contained in the transmitted waveform.
(b) What do you mean by false alarm? What are the design precautions to be taken to minimize it?
3. (a) With the help of block diagram, explain the operation of CW radar with non-zero IF in the receiver.
(b) Describe the methods to achieve isolation between transmitter and receiver of CW Doppler radar if same antenna is to be used for transmission and reception.
4. (a) Write necessary equations to measure range and Doppler frequency in FM – CW radar.
(b) Compare FM-CW radar with pulse radar.
5. (a) Draw the block diagram of non-coherent MTI radar and explain the function of each block.
(b) What are the advantages of non-coherent MTI radar?
6. (a) Describe automatic tracking of a target through range gating technique.
(b) Describe sequential lobing type of error signal generation to track a target automatically.
(c) Compare monopulse tracker over conical scan type tracker.
7. (a) Derive the transfer function for matched filter.
(b) Write short notes on:
(i) Coherent detector.
(ii) Likelihood ratio receiver.
8. (a) Explain about the beam steering and variations in beam width with variations in steering angle of an antenna array system.
(b) List out the advantages, limitations and applications of antenna arrays in radar systems.
