

IV B.Tech I Semester Supplementary Examinations, November 2005
RADAR ENGINEERING
(Electronics & Communication Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Obtain the Radar equation and discuss the various parameters which improve the performance of the Radar.
(b) Explain about applications of radar. [10+6]
2. Discuss in detail the Radar Cross Section of targets and the Cross section fluctuations. [16]
3. (a) For an unambiguous range of 81 nautical miles (1 nautical mile = 1852 mt) in a two frequency CW radar. Determine f_2 and Δf when $f_1 = 4.2$ Hz. Derive the expression used to solve this problem.
(b) Write about the necessity of using filter banks in CW radar receiver system. [10+6]
4. (a) Explain the operation of an MTI radar with 2 prfs.
(b) Draw the block diagram of Range-Rated Doppler Filters and explain. [8+8]
5. (a) Mention the limitations of MTI radar related to clutter parameters.
(b) Mention the limitations of improvement factor imposed by pulse-to-pulse instability.
(c) Write short notes on inter clutter visibility. [6+5+5]
6. (a) Compare the tracking techniques.
(b) Explain in detail about limitations to tracking accuracy. [10+6]
7. (a) Explain the terms: side lobe radiation and aperture efficiency, as applicable to radar antennas.
(b) Explain the significance and effects of uniform excitation and tapered excitation of parabolic reflectors. [8+8]
8. Derive the matched-filter characteristics. Hence differentiate between different types of matched filters. How do these characteristics depend on input signal shape? [16]
