

Code: EC7T3

**IV B.Tech - I Semester – Regular / Supplementary Examinations  
November 2016**

**RADAR SYSTEMS  
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

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. 7 M

b) List the major applications of radar in civil and military systems. 7 M

2.

a) Find the maximum range of a radar whose transmitted power is 150 KW, cross sectional area of the target is 20 sq. m. The minimum power received is 1 mw. The power gain of the antenna used is 950 and the operating frequency is 2 GHz. 8 M

b) Write short notes on integration of radar pulses. 6 M

3.

a) With the help of block diagram, explain the operation of CW radar with non-zero IF receiver. 7 M

- b) Explain the block diagram of IF Doppler filter bank with frequency response characteristics. 7 M
- 4.
- a) Explain how range and Doppler measurement is carried out in FM-CW radar. 8 M
- b) Explain the measurement errors of radar altimeters. 6 M
5. Write short notes on the following: 14 M
- i) Staggered PRF            ii) Range gated Doppler filter  
iii) Limitations of MTI radar
- 6.
- a) What is tracking radar? Briefly explain different types of tracking radars. 8 M
- b) Write short notes on role of acquisition in radars. 6 M
- 7.
- a) Derive an expression for the frequency response of matched filter characteristics. 9 M
- b) Compare the efficiency of non-matched filter with matched filter. 5 M
- 8.
- a) Explain various types of radar displays. 7 M
- b) Explain types of duplexers used in radar. 7 M