(Following Paper ID and Roll No. to be filled in your Answer Books)	
Paper ID : 131855	Roll No.

B.TECH.

Theory Examination (Semester-VIII) 2015-16

INTRODUCTION TO RADAR SYSTEMS

Time : 3 Hours ***Max. Marks : 100***

Note :- Attempt all questions. All questions carry equal marks.

Section-A

1. Attempt any four parts :- (10×2 = 20)

(a) Explain basic principle of radar system with suitable diagram.

(b) Define pulse width, pulse repetition time, rest time and duty cycle with their formulae.

(c) Explain the term Blind speed.

(d) How MTI radar is different from other radar systems.

(e) What do you understand by second time around signal?

(f) Describe the concept of Doppler frequency shift.

(g) Explain minimum detectable signal.

(h) Calculate average power when peak power is 200 kW, pulse width is 2 μs and rest time is 2000s.

(i) Describe the terms clutter and ambiguity.

(j) What do you mean by false alarm?

Section-B

2. Attempt any five questions. [5×10=50]

(a) Explain MTI radar with suitable block diagram. Also give its applications.

(b) Explain conical scan and sequential lobbing in detail.

(c) Discuss limitations of tracking accuracy.

(d) Explain various antenna parameters.

(e) Describe Automatic Tracking with Surveillance radars in detail.

(f) What do you understand by Tracking with Radar? Explain mono pulse tracking.

(g) Write short note on radar clutter and accuracy of Radar measurements.

(h) Derive expression for probability of false alarm. Distinguish it from probability of miss.

Section-C

Attempt any two questions [2×15=30]

3. Derive the expression for simple form of radar range equation. Radar is operating at 1.5cm with peak pulse power of 300 kW. The capture area of antenna is $5m^2$ and minimum detectable signal is 10^{-12} W. Calculate the maximum range of radar if radar cross section of target is 10 m^2.

4. Explain various system losses in detail.

5. Write short note on:

   i. Low angle tracking

   ii. Delay line canceller