17EC833

Eighth Semester B.E. Degree Examination, June/July 2024

Radar Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

a. Define Radar and List out application of Radar.

(10 Marks)

- b. Write short note on:
 - (i) Maximum unambiguous range.
 - (ii) Second time around echers.

(10 Marks)

OF

- 2 a. An Antenna is radiating Electromagnetic wave, if $P_t = 1$ MW, $\tau = 1$ µsec, $T_p = 1$ msec. Find Pav? Where $P_t = \text{transmiting power}$, C = Pulse repition frequency, $T_P = \text{Time period of pulse}$, Pav = Average power. (08 Marks)
 - b. Explain with block diagram, working principle of Radar.

(12 Marks)

Module-2

- 3 Explain:
 - a. Radar equation.
 - b. Threshold detection.
 - c. False alarm.
 - d. Missed detection.

(20 Marks)

OR

- a. Compare and contrast pulse repetition frequency and multiple time around echo. (10 Marks)
 - b. With block diagram, explain Envelop detector.

(10 Marks)

Module-3

5 a. Derive equation of Doppler frequency?

(10 Marks)

b. Explain with block diagram, simple CW (Continuous Wave) Doppler?

(10 Marks)

OR

6 a. Explain with block diagram Delay line Canceller.

(10 Marks)

b. Explain with block diagram, MTI Radar.

(10 Marks)

Module-4

7 a. Explain different types of Tracking Radar.

(10 Marks)

b. Explain with block diagram one angle coordinator of amplitude comparision?

(10 Marks)

Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice Important Note: 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.

OR

8 a. Explain different Hybrid junction used in monopusle radar. (10 Marks)
b. Compare canonical scan x sequential lobing. (10 Marks)

Module-5

9 a. Explain function of Radar Antenna? (10 Marks)
b. Explain receiver Noise figure. (10 Marks)

OR

Write short note on:

a. Super Heterodyne Receiver.

b. Duplexer.

c. Radar displays.
d. Receive protector.

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(20 Marks)