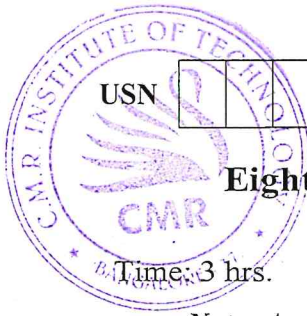


CBCS SCHEME



18EC823

Eighth Semester B.E. Degree Examination, July/August 2022 Radar Engineering

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Derive simple form of radar range equation. (10 Marks)
b. Define radar and explain basic principle of radar. (10 Marks)

OR

- 2 a. Explain block diagram of a radar with a neat diagram and explain each block. (10 Marks)
b. Explain various applications of radar. (10 Marks)

Module-2

- 3 a. Define noise figure and derive modified radar range equation. (10 Marks)
b. Discuss with equation and graph the probability of false alarm. (10 Marks)

OR

- 4 a. Explain the radar cross section of sphere and cone sphere targets. (10 Marks)
b. Discuss briefly the following types of system losses in radar: i) Microwave plumbing losses
ii) Antenna losses iii) Duplexer losses iv) Connector losses. (10 Marks)

Module-3

- 5 a. With a neat block diagram, explain simple CW Doppler radar. Also mention the advantages and disadvantages. (10 Marks)
b. Derive equations for clutter attenuation and MTI improvement factor. (10 Marks)

OR

- 6 a. With a neat block diagram, explain the original Moving Target Detector (MTD) signal processor. (10 Marks)
b. Explain the working of digital Moving Target Indicator (MTI) Doppler signal processor with neat diagram. (10 Marks)

Module-4

- 7 a. Explain types of tracking radar systems. (10 Marks)
b. Explain the block diagram of conical scan tracking radar. (10 Marks)

OR

- 8 a. Define monopulse tracker. Using block diagram explain amplitude comparison monopulse tracking radar for a single angular coordinate. (10 Marks)
b. Discuss the concept of phase comparison monopulse. (10 Marks)

Module-5

- 9 a. List the different functions served by radar antenna. (10 Marks)
b. Explain different types of radar display system. (10 Marks)

OR

- 10 a. Write a note on reflector antennas. (10 Marks)
b. What is the role of duplexer's in radar system? Illustrate the transmit condition and receive condition in case of balanced mixer. (10 Marks)

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

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