

**Eighth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
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. With neat block diagram, explain conventional pulse radar with a superhetrodyne receiver. (10 Marks)
- b. A typical pulse waveform of radar is shown in below Fig.Q1(b). In which some parameters of radar is shown. Calculate :
 - i) Average power
 - ii) Duty cycle
 - iii) Maximum range of radar.

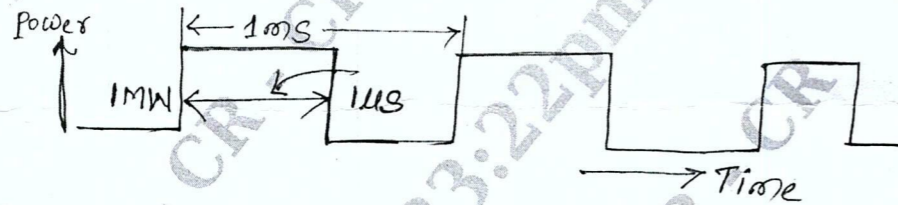


Fig.Q1(b) (10 Marks)

OR

- 2 a. Briefly describe the major areas of radar applications. (06 Marks)
- b. Derive simple form of the radar range equation. (08 Marks)
- c. Explain basic principle of RADAR with neat diagram. (06 Marks)

Module-2

- 3 a. Derive the modified RADAR equation in terms of signal – to –noise ratio. (10 Marks)
- b. Discuss briefly following types of signal losses in radar.
 - i) Microwave plumbing losses
 - ii) Antenna losses
 - iii) Signal – processing losses. (10 Marks)

OR

- 4 a. Make use of portion of radar block diagram, discuss with necessary equation the probability of false alarm and probability of detection. (10 Marks)
- b. Illustrate the concepts of pulse – repetition frequency and range ambiguities in case of radar. (10 Marks)

Module-3

- 5 a. With a neat block diagram, explain simple CW Doppler radar, also mention advantages and disadvantages. (10 Marks)
- b. Explain with a neat block diagram the working of a digital MTI Doppler signal processor. (10 Marks)

OR

- 6 a. With a block diagram, explain the working of MTI radar with power amplifier transmitter. (10 Marks)
- b. With a neat block diagram, explain Moving Target Detector (MTD). (10 Marks)

Module-4

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

OR

- 8 a. With a neat diagram explain sequential lobing and conical scan. (10 Marks)
- b. Explain the block diagram of amplitude comparison monopulse tracking radar for a single angular co-ordinate and explain its operation. (10 Marks)

Module-5

- 9 a. What are the functions of radar antenna? (04 Marks)
- b. Explain the following antenna parameters :
 - i) Directive gain
 - ii) Effective aperture. (06 Marks)
- c. Write a brief note on radar displays. (10 Marks)

OR

- 10 a. Write short notes on super heterodyne receiver. (10 Marks)
- b. Write short notes on Reflector antennas. (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.