QUESTION BANK

**Paper: Radar and Navigation(ECE)**

**CHAPTER 1: Introduction to Radar**

1. Explain the operation of pulse radar with a block diagram.

2. Derive the radar range equation.

3. Explain minimum detectable signal &receiver noise.

4. Write short notes on: Radar cross section of targets

5. Write short notes on a) cross section fluctuations b) transmitter power

6. Explain in detail about pulse repetition frequency and range ambiguities.

7. Explain in detail about system losses and propagation effects

**UNIT II – RADAR RECEIVERS AND CW AND MTI RADAR**

1. Draw and explain about simple CW radar.

2. Explain in detail about FM CW radar with a block diagram.

3. Explain with a block diagram of FM CW altimeter.

4. Explain MTI radar with a block diagram.

5. Write short notes on delay line canceler.

6. Explain with a block diagram range gated Doppler filters.

7. Explain with a block diagram of non coherent MTI radar.

8. Explain in detail about pulse Doppler radar.

9. Explain with a neat diagram about sequential lobing.

10. Explain with a neat block diagram of conical scan tracking radar.

11. Explain briefly about amplitude comparison monopulse radar.

12. Explain briefly about phase comparison monopulse radar.

13. Explain in detail about multiple frequency CW radar.

**UNIT-III – radar transmitters and detection of signals in noise**

1. Explain in Detail about different types of observer model based on threshold detection.

2. Explain in detail about binary moving – window detector with a neat block diagram.

3. Write short notes on (a) Tapped Delay Line Integrator (b) Re-circulating Delay line Integrator.

4. Explain briefly about CFAR Receiver.

5. Explain in detail about Ambiguity Diagram.

6. What is Pulse Compression? Explain in detail about Linear FM pulse compression.

7. Explain in detail about propagation over a plane earth.

8. Write short notes on (a) Anomalous propagation (b) Diffraction.

9. Explain in detail about super heterodyne receiver.

**UNIT-IV – Navigation**

1. Explain Adcock direction finder.

2. Explain the types of Automatic direction finders with a block diagram

3. Explain Radio compass Automatic direction finder

4. Explain VHF phase comparison automatic direction finders

5. With a block diagram explain the operation of VHF Omni-directional range.

6. Explain in detail about LORAN navigation system

7. Briefly explain DECCA navigation system

8. Write short notes on DECCA receivers

9. Explain TACAN secondary radar systems.

10. Explain the types of landing systems

11. With the block diagram, explain the operation of GCA system.