ASSIGNMENTS

**Paper: Radar and Navigation(ECE) Paper Code: ETEC 419**

**Assignment no.1**

Q1. Draw the block diagram of a Pulsed radar and explain its operation  
Q2. Write the relative factors between the radar’s cross section of the target and its true cross sections  
Q3. Derive basic radar’s equation  
Q4. Explain about the frequencies used for radar.  
Q5. Discuss in detail the choice of various parameters that are affecting the radar range  
Q6. Derive the range equation and discuss about its limitations  
Q7. What do you understand by false alarm  
Q8. A pulsed radar operating at 10GHz has an antenna with a gain of 28dB and a transmitter power of 2KW . If it is defined to detect a target with a cross section of 12sq.m and the minimum detectable signal is Pmin= -90dBm. What is the maximum range of the radar.

**Assignment no. 2**

Q1.Explain the principle of operation FM –CW altimeter with suitable diagrams.  
  
Q2. Explain the operation of sideband superhetreodyne CW Doppler radar with block diagram.  
Q4. Explain how the noise signals are limiting the performance of FM-altimeter .  
Q5. What are advantages and disadvantages of FM-CW radar over multiple frequency CW radar.

Q6. What is meant by minimum detectable signal in radar. Discuss the effects of integration of radar pulses  
Q7. What are the desirable pulse characteristics and the factors that govern them in a radar system  
Q8. Discuss about detection of signals in noise  
Q9. Describe the different noise components present in radar systems  
Q10. Explain about PRF and range ambiguities  
Q11. Explain about radar cross section of targets.

**Assignment no. 3**

Q1).Explain the characteristics of a matched filter receiver with necessary equations  
Q2).Explain about matched and non –matched filters  
Q3).Explain the characteristics of a cross –correlation receiver with a block diagram  
Q4) Derive and explain the efficiency of non-matched filters  
Q5).Explain about matched filter with non –white noise

**Assignment no. 4**

Q1.Explain Tracking Principles  
Q2. Explain the block diagram of amplitude comparison monopulse radar for single angular coordinate and explain its operation  
Q3.Explain phase comparison monopulse tracking radar technique  
Q4.Explain the block diagram of AGC portion of tracking radar receiver  
Q5.Explain about sequential Lobing  
Q6.What are the advantages of monopulse radar over conical scan radar?  
Q7.Distinguish between search radar and tracking radar?  
Q8.Compare the tracking techniques.How is radar target acquired in a typical radar?