Roll No .........................

# MEMT - 205

## M.E./M.Tech., II Semester

Examination, December 2015

## Advance Communication Systems

*Time : Three Hours*

*Maximum Marks : 70*

*Note:* i)　Attempt any five questions.
ii)　All questions carry equal marks.

1. a) Compare frequency division multiple access code division multiple access and demand assigned multiple access techniques.

   b) Describe M-ary frequency shift keying generation and detection with the help of suitable diagram.

2. a) White noise with power spectral density '$\eta/2$' is filtered by a rectangular bandpass filter with transfer function $H(f)=1$, centered at $f_0$ and having a bandwidth 'B'. Calculate power and power spectral density of noise components.

   b) Calculate the noise in PCM system.

3. a) Discuss matched filter performance.

   b) Derive the expression for signal to noise ratio in AM system and FM system.

4. a) The signal power received for a desired signal of 200 k b/s bit rate signal is 2mW. The chip frequency used is 100MHZ. A jamming signal is employed at the carrier frequency. The received power of which is 3W. Calculate
   i)　Processing gain
   ii)　Error probability without jamming and with jamming

   b) Describe FHCDMA generation and detection in brief.

5. a) Explain why bandwidth efficiency is different for M-PSK and M-FSK modulation system.

   b) Show that sum of two-Poisson processes with rates $\lambda_1$ and $\lambda_2$ is also Poisson process, with rate $\lambda_1 = \lambda_1 + \lambda_2$ also find result for the sum of n Poisson processes.

6. a) For a QPSK signal with SNR20dB, find the probability of error. If this error probability is allowed for the transmission of bit rate of 100kbps over the additive white gaussian noise channel with one-sided power spectral density of noise $0.7 \times 10^{-11}$ W/Hz. What should be the amplitude of signal satisfying these conditions?

   b) What is the bandwidth efficiency for FSK, ASK and BPSK for BER of $10^{-5}$ on a channel with SNR of 20dB?

7. a) Why is the near far problem more serious in CDMA based schemes? Explain with suitable example.

   b) Describe WI-FI standards in detail.

8. Write short note (Any Two) :
   a) Wireless ATM
   b) Radio interference
   c) Thermal noise consideration
   d) Mobile transport layer

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