ROLL NO.									

B.E. / B.TECH (FULL TIME) END SEMESTER ARREAR EXAMINATIONS APRIL/MAY 2013
INFORMATION TECHNOLOGY
THIRD SEMESTER REGULATIONS : 2008
EC 9212 - COMMUNICATION TECHNIQUES

Time 3 hrs **Max Marks 100**

Answer All Questions

PART - A(10x2=20)

1. Define Modulation Index and find the modulation index if a 10 V carrier is amplitude modulated by three different frequencies with amplitudes of 1 V, 2 V and 3 V respectively.
2. Give two advantages of SSB operation compared with full carrier AM.
3. Draw the wave forms for the digital signal [1100101] while it is transmitted with Manchester Coding format.
4. List the drawbacks in Delta Modulation technique.
5. Why is delta phase-shift keying the most common form of PSK?
6. What is pulse shaping? Name a technique.
7. A source emits symbols from a set of 16 symbols at rate 1000 symbols / second. The symbols are transmitted with equal probability. Then find the information rate of the source.
8. A 10 KHz channel deliver the signal to a receiver. The receiver gets signal power to noise power ratio of 3. Then calculate the capacity of the channel.
9. What happens if a receiver attempts to decode a spread spectrum signal without the correct PN code?
10. List the difference between multiple access and multiplexing.

PART - B(5x16=80)

11. (a)(i) Explain the indirect FM Modulation in detail. **(8)**
    (ii) With neat block diagram explain the operation of superheterodyne receiver. **(8)**

12.(a)(i) Explain Pulse code modulation in detail. **(8)**
    (ii) Discuss in detail about the Differential PCM and Adaptive Delta Modulation. **(8)**

OR

12.(b)(i) Briefly explain the Vocoder. **(6)**
    (ii) Explain the Time Division Multiplexing and frequency Division Multiplexing in detail. **(10)**

13.(a) Describe the different types of Phase shift keying. **(16)**

OR

13.(b)(i) What is Eye Diagram? Draw an Eye pattern and brief the information received from the Eye pattern. **(8)**

(ii) Explain the encoder and decoder of modified duo-binary coding scheme. **(8)**

14.(a) A discrete memoryless source has an alphabet of five symbols S_1, S_2, S_3, S_4 and S_5 with probabilities {0.55, 0.15, 0.15, 0.10, 0.05} technique.

(i) Encode the symbols using Huffman coding techniques. **(6)**

(ii) Encode the same using Shannon-Fano coding technique. **(6)**

(iii) Calculate the efficiency offered by the above two techniques and compare. **(4)**

OR

14.(b) Specify the generator polynomial and design a convolutional encoder with constraint length 3. Obtain the trellis of the encoder. Calculate the output of the encoder for the input sequence [101100]. **(16)**

15.(a)(i) How many signals would fit into a 1 MHz spectrum allocation, when voice with a maximum frequency of 4 KHz, modulated using SSBSC AM and DSB full carrier AM, high fidelity music with a maximum baseband frequency of 15 KHz using wideband FM with a maximum deviation of 75 KHz, a bit stream at 56 Kb/s using QPSK. **(8)**

(ii) Write short notes on Frequency Hopping and Direct sequence systems. **(8)**

OR

15.(b) Explain the CDMA concept and Design a CDMA system with 4 stations, stations 1 & 2 are sending a 1 bit and station 3 is sending 0 bit, station 4 is silent. Generate the Digital signal for the 4 stations and detect the data sent by station 2. **(16)**
