

**END SEMESTER EXAMINATION NOV/DEC 2012**

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**EC 9261 COMMUNICATION ENGINEERING**

**IV SEMESTER**

**R2008**

**Time 3 hr**

**Max Marks 100**

**Answer All Questions**

**PART A(10x2=20)**

1. A ,1 MHz, 400watts carrier signal is amplitude modulated to a depth of 60% by a sinusoidal signal of 5 KHz. Draw the spectrum of modulated signal.
2. What is meant by Vestigial Side Band Modulation? Why is it preferred in Television transmission?
3. State the relationship between DPCM and Delta Modulation.
4. Draw the signal constellation diagram of 16 QAM modulation scheme.
5. Give the channel matrix of a BSC.
6. Draw the line code of binary data sequence (1010110) in RZ and NRZ coding schemes.
7. Write the types of spread spectrum techniques used in communication systems.
8. Briefly explain the term jamming margin in spread spectrum communication.
9. Write down the classification of fibres based on the profile structure and the material used.
10. What are Elevation angle and Azimuth angle in satellite communication?

**PART B(5X16=80)**

- 11.i )Explain the multiple access techniques TDMA,FDMA and CDMA used in wireless mobile communication. Also explain the access scheme used in the forward and the reverse channel of wireless systems. (10)
- ii)Explain the direct sequence spread spectrum modulation technique used with BPSK modulation. (6)
- 12.a.i) Draw the block diagram of commercial AM receiver and explain in detail. (12)
- ii) Describe the relationship between the Phase and Frequency modulation. (4)
- OR
- 12.b.i) Explain the operation of balanced modulator used to generate the DSBSC signal. (8)
- ii) Describe the process of FM signal generation using Armstrong method. (8)

13 .a.i). Explain the process of Delta Modulation and the noises associated with it. Derive the Condition to avoid them. (12)

ii). Illustrate the difference between PPM and PDM. (4)

OR

13.b.i) Draw the block diagram of BFSK transmitter and receiver and explain in detail. (12)

ii) State the low pass sampling theorem and prove. (4)

14.a. A Discrete memoryless source S has five symbols A,B,C,D and E with probabilities 0.4, 0.19, 0.16, 0.15 and 0.1 respectively.

i) Construct a Shannon-Fano code for S and calculate the efficiency of the code. (8)

ii) Repeat for the Huffman code and compare the results. (8)

OR

14.b. i) Write in brief about ARQ mechanism. (6)

ii) Consider a (6,3) linear block code with parity check matrix given by  $H =$  (10)

a. Find the generator matrix G.

b. Find the code word for the data 101.

15.a. With a neat block diagram explain the satellite communication link. Derive link budget for uplink and down link.

OR

15.b.i. List the advantages of optical fibre communication system. (4)

ii. Draw the block diagram of an optical link and explain each block. (12)

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