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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

Electrical and Electronics Engineering

Fourth Semester

EC9261 Communication Engineering

(Regulation 2008)

Time: 3 Hours | Answer ALL Questions | Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Draw the magnitude spectrum of AM and DSB-SC modulated signals.
2. A frequency modulated signal uses modulation index equal to 5. Classify the resultant signal under NBFM and WBFM and justify.
3. Draw the constellation diagram of BPSK and BFSK signals.
4. A periodic signal has three harmonic tone as 50Hz, 500 Hz and 750 Hz. If the signal is sampled without aliasing, find the minimum sampling frequency required to sample the signal.
5. A discrete memoryless source emits 4 symbols with probabilities 0.5, 0.25, 0.125 and 0.125. Then calculate the average information present in the symbols.
6. Draw the NRZ unipolar and AMI coded signal for the binary input "0 1 0 1 1 0 0 1..." .
7. Differentiate: multiplexing and multiple access techniques.
8. What is SDMA?
9. What is geo-synchronous orbit? Write its importance in communication.
10. Draw the schematic of a optical fiber communication system used for voice communication.

Part – B (5 x 16 = 80 marks)

11. With suitable diagrams, explain the generation and detection of (i) PAM, (ii) PWM and (iii) PPM signals. List the merits and demerits of the respective techniques.

12. a) Draw the schematic diagram of AM signal generator and detection using envelope detection. Draw the modulated and demodulated signals for under modulated, critically modulated and over modulated conditions

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b) Describe Armstrong method of FM signal generation. Emphasize the use of multiple frequency multiplier in the modulator chain with suitable example.

13. a) Consider a discrete memoryless source emits 6 symbols $\{x_i, i=1,2,\ldots,6\}$ with probabilities {0.2, 0.25, 0.15, 0.15, 0.13, 0.12} respectively. Identify the binary code words for the symbols using (i) Shannon-Fano and (ii) Huffman Coding techniques; (iii) compare the efficiency provided by the code words derived from the above techniques.

(OR)

b) What is convolutional code? Describe each one method used for its generation and detection.

14. a) With suitable technique brief the following multiple access techniques (i) FDMA, (ii) TDMA, (iii) CDMA

(OR)

b) Write a note on PN sequence and brief the operational principle of DSSS communication system with suitable diagrams.

15. a) Briefly discuss about various sources and detector used in the optical communication link with their own limitations

(OR)

b) Discuss about the link budget of a satellite communication system.