Question Paper Code : R 3672

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Fifth Semester

Computer Science and Engineering

EC 351 — ANALOG, DIGITAL AND DATA COMMUNICATIONS

(Regulation 2001)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define upper and lower side bands and bandwidth of an amplitude modulated wave.

2. What are the significant advantages of frequency modulation over amplitude modulation?

3. Define entropy.

4. What is the difference between error detection and error correction?

5. Mention the applications of satellites.

6. What are the advantages of digital transmission?

7. Define bit rate and baud.

8. What is a constellation diagram?

9. What are the functions of the data link protocol?

10. What is the need for multiplexing?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Define frequency and phase modulation and obtain equations for their modulation index. (8)

    (ii) Describe with a block diagram the Armstrong indirect FM modulator. (8)

Or

(b) (i) Explain with neat waveforms, the different pulse modulation schemes. (6)

    (ii) Distinguish between natural and flat top sampling and explain the operation of the sampling block in the PCM system. (10)

12. (a) Consider a source producing 5 symbols with their respective probability of occurrence A = 1/2, B = 1/6, C = 1/12, D = 1/6 and E = 1/12. Compute its entropy. Use a coding scheme and device an unambiguous binary code. Compute its coding efficiency. (16)

Or

(b) Draw the diagram of a general convolution encoder and explain how code word sequences are generated. (16)

13. (a) (i) Discuss the different transmission impairments during data transmission. (6)

    (ii) Give the transmission characteristics and explain how the optical fibre acts as a versatile transmission medium. (10)

Or

(b) (i) Describe the features and purposes of data communication interfaces. (6)

    (ii) Compare synchronous and asynchronous transmissions. (10)

14. (a) (i) Explain with a neat diagram, frequency shift keying and obtain the relation for baud and minimum bandwidth. (6)

    (ii) Describe the operation of a FSK transmitter and receiver. (10)

Or

(b) (i) Explain with a block diagram, the operation of a delta modulator. (10)

    (ii) Compare its advantages and disadvantages over the PCM system. (6)

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15. (a) Describe the characteristics features and operational modes of High Level Data Link Control. (16)

Or

(b) Describe stop and wait and sliding window flow control methods. (16)