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Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 33380

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Fourth Semester

Computer Science and Engineering

EC 1291 — ANALOG AND DIGITAL COMMUNICATION

(Regulation 2004/2007)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Draw the frequency spectrum of AM.

2. Distinguish between low level and high level AM transmitters.

3. What is the commercial broadcast band for FM?

4. State Carlson's rule.

5. What is meant by ISI?

6. Why are signals companded?

7. What is frequency-shift keying (FSK)?

8. Draw the phasor diagram for a 8-QAM modulator.

9. What are slow frequency hopping and fast frequency hopping?

10. Define processing Gain in spread spectrum system.

PART B — (5 × 16 = 80 marks)

11. (a) With a Block diagram, explain the working of a super heterodyne receiver. List out its salient features as compared with TRF receiver. (16)

Or

(b) Give a detailed discussion on any two popular techniques used in amplitude modulated signal generation. Draw necessary diagrams. (16)

12. (a) Draw the circuits of

(i) Varactor diode FM modulator and (8)

(ii) Reactance modulator and explain the generation of FM. (8)

Or

(b) Draw the circuit diagram of Foster-Seeley discriminator and explain its operation. (16)

13. (a) (i) Discuss the main features of the serial port communication standard RS 232. (6)

(ii) Explain the different methods of classifying modems based on the speed of transmission and synchronization. (10)

Or

(b) (i) Explain the function of a quantizer in a PCM system. Obtain an equation for quantizing noise assuming a uniform quantizer. (10)

(ii) Describe the function of a compander. (6)

14. (a) (i) Define Shannon's capacity theorem. (4)

(ii) Describe BFSK transmitter and receiver. Derive the probability of bit error. (12)

Or

(b) (i) Determine the bandwidth efficiency for BPSK, QPSK and BFSK if bit rate is 64 kb/sec. (6)

(ii) What is QAM? (4)

(iii) Draw the data signal, carrier signal and BPSK signal for the data 110101. (6)

15. (a) (i) Give the advantages associated with spreading a signal spectrum. (6)

(ii) Describe the structure of feedback shift register for generating PN sequences. (10)

Or

(b) (i) Explain FH-CDMA acquisition and tracking with neat sketches. (8)

(ii) Compare TDMA, FDMA and CDMA multiple access techniques. (8)