

Question Paper Code : P 1256

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

Fourth Semester

Computer Science and Engineering

EC 1291 — ANALOG AND DIGITAL COMMUNICATION

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Audio frequency of 15 KHz amplitude modulates a carrier of 1000 KHz. What is the bandwidth of the signal if the system is a double side band system?
2. Mention the advantages of Tuned Radio Frequency receivers.
3. What is the commercial broadcast band for FM?
4. State Carlson's rule.
5. Define adaptive data modulation.
6. When does Inter Symbol Interference occur?
7. What is OOK?
8. Determine the bandwidth of a FSK signal with mark frequency of 32 KHz and space frequency of 24 KHz and bit rate of 4 KBPS.
9. Mention two important properties of PN sequences.
10. What is fast frequency hopping?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Derive from first principles the equation of an Amplitude Modulated wave and explain its various components. (8)
- (ii) Obtain the power distribution of AM in different side bands and its total power. (8)

Or

- (b) (i) Draw the block diagram of a super heterodyne receiver and explain the function of each block. (10)
- (ii) What are double conversion AM receivers? State their advantages. (6)
12. (a) (i) Explain FM and PM with suitable waveforms. (8)
- (ii) Explain the indirect method of FM generation. (8)

Or

- (b) (i) Draw the block diagram of a PLL FM demodulator and explain its operation. (8)
- (ii) Explain how noise suppression is achieved in FM. (8)
13. (a) (i) Discuss the main features of the serial port communication standard RS232. (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 BPSK and QPSK. Draw the block diagram and constellation diagram of a QPSK system and explain its working. (10)
- (ii) Explain how BW consideration is carried out in QPSK. (6)

Or

- (b) (i) Describe coherent and noncoherent detection of FSK. (10)
- (ii) Explain with phasor diagram how digital information can be contained in both amplitude and phase using QAM technique. (6)

15. (a) (i) Draw the block diagram of a DSS coherent binary PSK system and explain the transmitter and receiver blocks. (10)
- (ii) Explain how the system is capable of resistance to interferences. (6)

Or

- (b) Explain the need for multiple access techniques. Draw the block diagram of a TDMA system and explain. Enumerate its advantages and disadvantages over FDMA technique. (16)

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