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Question Paper Code : 77096

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Third Semester

Computer Science and Engineering

CS 6304 — ANALOG AND DIGITAL COMMUNICATION

(Common to Information Technology, also common to Fourth Semester
Biomedical Engineering)

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Draw the spectrum of an AM signal.
2. What is the bandwidth of the FM signal if the frequency sensitivity of the modulator is 25 KHz per volt?
3. Sketch the QPSK signal for the binary sequence 11001100
4. Compare QPSK and 16 PSK signal in terms of bandwidth.
5. State the need for companding in a PCM system.
6. Mention how PPM is derived from PWM.
7. An event has six possible outcomes with probabilities $1/2, 1/4, 1/8, 1/16, 1/32, 1/32$. Find the entropy of the system.
8. What is mutual information?
9. What is near far effect in a CDMA system?
10. Define the term frequency reuse factor in a cellular communication system.

PART B — (5 × 16 = 80 marks)

11. (a) With the help of mathematical expressions explain about Amplitude Modulation, its generation and detection. (16)

Or

- (b) (i) Draw the phasor diagram of a wideband FM and explain about the bandwidth of FM signal. (8)
- (ii) Explain the difference between phase modulation and frequency modulation. (8)
12. (a) Draw the constellation diagram of QPSK modulation and explain the QPSK modulation and demodulation of QPSK. (16)

Or

- (b) Explain the method of generation of QAM and the demodulation of the same. (16)
13. (a) Discuss about serial and parallel interfaces. (16)

Or

- (b) Discuss about the generation of PAM and its demodulation. (16)
14. (a) Explain how Viterbi's decoding procedure is used for decoding convolutional codes. (16)

Or

- (b) Derive the expression for channel capacity of a continuous channel. Comment on the trade-off between SNR and capacity. (16)
15. (a) Draw the architecture of GSM system and explain the function of each block. (16)

Or

- (b) Illustrate the operation of a satellite communication system with a block diagram. (16)