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Question Paper Code : 11380

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Sixth Semester

Electronics and Communication Engineering

EC 1351 A — DIGITAL COMMUNICATION TECHNIQUES

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is PAM? Mention its disadvantage.
2. What is the principle of differential PCM?
3. What does opening and closing of eye in eye diagram convey?
4. Mention a method to overcome ISI.
5. What is differential PSK?
6. What is carrier recovery?
7. What is the purpose of error control coding?
8. What is interleaving?
9. List the advantages of spread spectrum.
10. What is a maximal length sequence?

PART B — (5 × 16 = 80 marks)

11. (a) Describe the process of quantization. Obtain the expression for signal to quantization noise ratio of a uniform quantizer. (16)

Or

- (b) (i) Describe with a block diagram the operation of a delta modulator. (8)
- (ii) Explain the advantages and the types of noise that occur in a delta modulator. (8)
12. (a) Explain the need for equalization in digital communication and describe the use of adaptive filters for this purpose. (16)

Or

- (b) Describe the principle of a matched filter and explain how it can be used for maximizing the SNR of the receiver. (16)
13. (a) (i) Explain with necessary diagrams the methods of generation and detection of binary FSK. (10)
- (ii) Determine the peak frequency deviation, minimum bandwidth and baud for binary FSK with mark frequency 49KHz, space frequency 51KHz and an input bit rate of 2Kbps. (6)

Or

- (b) Explain with a block diagram the operation of a QPSK transmitter and receiver. Draw its constellation and signal space diagram, Compare the probability of error performance of BPSK and QPSK. (16)
14. (a) Describe how cyclic codes can be generated and used for error control. Illustrate with an example. (16)

Or

- (b) Describe encoding using convolutional codes for a simple convolutional encoder. Explain the tree diagram, trellis diagram and state transition diagram representation of the coder. (16)
15. (a) (i) Explain the properties of PN sequences. (8)
- (ii) Describe with a block diagram the direct sequence transmitter and receiver. (8)

Or

- (b) (i) Explain the properties and features of Gold codes. (8)
- (ii) Describe with a block diagram, the operation of a Frequency Hop spread spectrum. (8)