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Question Paper Code : 51403

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Fifth Semester

Electronics and Communication Engineering

EC 2301/EC 51 — DIGITAL COMMUNICATION

(Regulation 2008)

(Common to PTEC 2301 – Digital Communication for B.E. (Part-Time) Fourth Semester Electronics and Communication Engineering Regulation 2009)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Classify communication channels.

2. State the demerit of digital communication.

3. What is the need for non uniform quantization?

4. List any four speech encoding procedures.

5. Define hamming distance and hamming weight.

6. What are the requirements of a line code?

7. What is ISI?

8. What is a matched filter?

9. What are the advantages of QPSK over PSK?

10. Draw the signal space diagram for QAM signal for M = 8.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw the block diagram of a digital communication system. Explain each block. (8)

(ii) Discuss the advantages of digital communication over analog communication. (8)

Or

(b) (i) Define basis set. How they are useful in representing a signal? (8)

(ii) With an example, explain how the basis set is determined by gram Scdmidt procedure. (8)

12. (a) (i) Explain non-uniform quantisation techniques. (8)

(ii) Explain temporal waveform encoding technique. (8)

Or

(b) (i) Describe the linear predictive coding technique in speech encoding. (8)

(ii) Explain model based encoding technique. (8)

13. (a) Explain the viterbi algorithm assuming a suitable convolutional coder and received bit stream.

Or

(b) (i) Brief about any one decoding procedure of linear block codes. (8)

(ii) Find a generator polynomial for a (7, 4) cyclic code and hence find the code word for [1 0 0 0]. (8)

14. (a) (i) Derive the expression for bit error probability of a matched filter. (10)

(ii) Explain a method of bit synchronisation. (6)

Or

(b) (i) Describe any one method for ISI control. (12)

(ii) List the inferences made from the eye pattern. (4)

15. (a) (i) Describe the following modulation methods :

(1) PSK

(2) QAM. (8)

(ii) Compare the performance of various digital modulation schemes. (8)

Or

(b) Discuss about the coherent detection of QPSK and non coherent detection of ASK. (16)
