Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 31361

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

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.   Mention the advantages of digital communication.

2.   What is a channel? Give examples.

3.   What is natural sampling?

4.   Write the A law of compression.

5.   What is line coding?

6.   Define code rate of a block code.

7.   Mention two properties of matched filter.

8.   What is the use of eye pattern?

9.   Mention the drawbacks of amplitude shift keying.

10. What are coherent systems?

PART B — (5 × 16 = 80 marks)

11. (a)   (i)   Explain the various analog pulse communication system describing
                 their advantages and drawbacks.   (8)

           (ii) Describe how channels can be classified and briefly explain each. (8)

                              Or

      (b)   (i)   Describe the elements of a digital communication system.   (8)

           (ii) Explain the mathematical models of various communication
                 channels.   (8)

12. (a) Describe temporal and spectral waveform encoding methods. (16)

Or

(b) Explain the process of quantization and obtain an expression for signal to quantization ratio in the case of a uniform quantizer. (16)

13. (a) Describe the steps involved in the generation of linear block codes. Define and explain the properties of syndrome. (16)

Or

(b) (i) Explain how convolutional codes can be generated. Illustrate with an example. (8)

(ii) For a convolutional encoder of constraint length 3 and rate $\frac{1}{2}$, obtain the encoded output for the input message 10011. (8)

14. (a) (i) Describe with a diagram the functioning of a correlator type receiver. (8)

(ii) Explain the equivalence between correlator and matched filter receiver. (8)

Or

(b) Describe coherent detection using maximum likelihood detector. (16)

15. (a) Describe with diagrams, the generation and detection of coherent binary FSK. Explain the probability of error for this scheme. (16)

Or

(b) (i) Explain the generation and detection of Binary PSK. (8)

(ii) Describe with signal space diagram quadrature amplitude modulation and its differences with respect to QPSK. (8)

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