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**Question Paper Code : 23450**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Fifth Semester

Electronics and Communication Engineering

EC 2301 — DIGITAL COMMUNICATION

(Regulations 2008)

(Common to PTEC 2301 — Digital Communication for B.E. (Part-Time) Fourth Semester – ECE – Regulations 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the advantages of Digital communication.

2. Which parameter is called as figure of merit of a digital communication system and why?

3. List any four speech encoding procedures.

4. What is natural sampling?

5. Define transparency of a line code. Give two examples of line codes which are not transparent.

6. Define ISI.

7. What is the need for a demodulator in case of base band signaling when the received waveforms are already in pulse like form?

8. What is the use of eye pattern?

9. What are coherent and non-coherent receivers?

10. Draw the constellation diagram of 8-QAM.

PART B — (5 × 16 = 80 marks)

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

(ii) Explain Binary symmetric channel and Gaussian channel. (8)

Or

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

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

12. (a) (i) Explain a PCM system. Derive the expression for quantization noise of a PCM system with uniform quantizer. (12)

(ii) Compare any two speech encoding techniques. (4)

Or

(b) Explain the following :

(i) Spectral waveform encoding (8)

(ii) Model based encoding. (8)

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

Or

(b) Derive and draw the power spectra of

(i) Polar coded waveform (8)

(ii) Bipolar coded waveform. (8)

14. (a) Derive the expression for bit error probability of a matched filter. (16)

Or

(b) Derive and explain the Nyquist first criterion for ISI elimination. (16)

15. (a) Derive the bit error probability due to coherent ASK, PSK and FSK systems. Compare the performance of these systems. (16)

Or

(b) Discuss QPSK signaling. Derive the bit error probability due to QPSK receiver. Compare the performance of QPSK receiver with that of PSK receiver. (16)

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