

B.Tech III Year I Semester (R13) Regular Examinations December 2015

**DIGITAL COMMUNICATION SYSTEMS**  
(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**  
(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- Define quantization.
  - What are the differences between ideal sampling and practical sampling?
  - List the properties of matched filter.
  - What is meant by Inter-symbol interference?
  - What are the assumptions to be made in deriving the expressions for the probability of an error?
  - Define Matched filter.
  - What is meant by differential phase shift keying?
  - What are the two forms of synchronization required for the operation of coherent detector?
  - List the advantages of convolutional codes over block codes.
  - Draw the block diagram of Forward Error Correction System.

**PART – B**  
(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 (a) Draw and explain the block diagram of TDM system.  
(b) Give the comparison of DPCM and DM with standard PCM.

**OR**

- 3 (a) Discuss the two major sources of quantizing error in DM systems.  
(b) Draw and explain the block diagram of a regenerative repeater.

**UNIT – II**

- 4 (a) Explain in brief about Duobinary signaling scheme.  
(b) Write a brief note on Eye pattern.

**OR**

- 5 (a) Explain in brief about Modified Duobinary signaling scheme.  
(b) Describe the baseband transmission of M-ary data.

**UNIT – III**

- 6 (a) Explain the Gram-Schmidt orthogonalization procedure.  
(b) Write a brief note on signal constellation diagram.

**OR**

- 7 (a) Explain the coherent detection of signals in noise.  
(b) With a neat sketch explain the working of correlation receiver.

**UNIT – IV**

- 8 (a) Give the comparison of power and bandwidth requirements for various digital modulation schemes.  
(b) Derive the error probability for QPSK.

**OR**

- 9 (a) Explain the generation and detection of BPSK.  
(b) Discuss in brief about Non-coherent detection of binary FSK.

**UNIT – V**

- 10 (a) Explain the concept of Interleaving.  
(b) Discuss in brief about sequential decoding of convolutional codes.

**OR**

- 11 (a) Describe the matrix representation of block codes.  
(b) With a neat sketch describe the operation of Viterbi algorithm.

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