

Reg. No. :

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B.E./B.Tech DEGREE END SEMESTER EXAMINATION, APRIL/MAY 2012

Electronics and Communication Engineering

Fifth Semester

EC9301 Digital Communication Techniques

(Regulation 2008)

Time: Three hours

Maximum : 100 Marks

Answer ALL questions

Part : A - (10 x 2 = 20 Marks)

1. What is ISI and what would be the reason for its occurrence?
2. Draw the Manchester code for the bit sequence [1 0 1 1 0 0...] for the data rate 10kbps.
3. What is the function of an equalizers?
4. Why do synchronizers are required in communication systems?
5. Define information and entropy
6. If a channel offers $SNR=1023$ and supports 1MHz bandwidth, then calculate the maximum data rate supported by the channel.
7. If a code offers 100% efficiency, then it cannot support error detection. State this statement is true/false and justify.
8. Differentiate Viterbi soft and hard decoding techniques
9. What is LDPC?
10. What is randomizer in turbo coder?

Part: B (5 x 16 = 80 Marks)

11. (a) Derive the condition for ISI free transmission? Suggest the practical methods to mitigate the ISI.
12. (a) (i) Derive the power spectral density of polar return to zero code (8)
(ii) What is eye diagram and what are the informations received from them?
Explain with suitable diagram. (8)
(OR)
(b) Briefly explain different kind of synchronization used in digital communication
13. (a) What is mutual information? Calculate the mutual information offered by BEC and BSC.
(OR)
(b) With suitable diagram, explain linear predictive coding

14. (a) Consider $g(D)=D^3+D+1$ is a generator polynomial of a (7,4) cyclic code. Develop the encoder and decoder of this coder. Explain its operation by encoding the message [1 0 0 0]

(OR)

(b) Explain the encoding and decoding operation of a convolutional with suitable example

15. (a) Explain turbo coding principle with suitable example

(OR)

(b) Explain trellis coded modulation with suitable figures.