E-Sem - II

EXTC   Choicebased

[Time: 3 Hrs]   [Marks: 80]

Please check whether you have got the right question paper.

N.B: 1. Question No. **1** is **compulsory**
        2. Solve any **three** from remaining **five** questions.

Q. 1   Solve any **Four**   (20)
   a) Explain coding for Analog sources.
   b) Explain various parameters associated with Eye Pattern.
   c) Comment on Lempel algorithm LM 77
   d) Prove that H (Y *IX)* = H (Y) when X and Yare mutually independent
   e) Explain effects of Imperfect carrier synchronization

Q. 2   a) Explain the optimum detection of M-ary using Matched filters of received message signal.   (10)
       b) State and prove Nyquist criteria that gives the necessary and sufficient condition for the   (10)
          spectrum X (f) of pulse X (t) that yields zero lSI.

Q. 3   a) Design and implement M-ary Non-coherent receiver for equal energy signal in random   (10)
          phase channels.
       b) Explain optimum detection in Rayleigh Channels.   (10)

Q. 4   a) A DMS has an alphabets of five letters Xi, i = 1, 2 ... 5 with probabilities 0.4,0.2,0.2,0.1,0.1. (10)
          Find average length and efficiency of the code
       b) What are the problems associated with colored Gaussian noise? Derive and explain   (10)
          optimum waveform receiver in colored Gaussian noise with K-L Expansion Approach.

Q. 5   a) Explain relevant and irrelevant noise? Also prove that nj and nk are   (10)
          uncorrelated and independent Gaussian random variables
       b) Explain Time Dispersion Parameters, coherence bandwidth and Doppler spread coherence   (10)
          time parameter

Q. 6   Write short note on: (20)
   a) Baye's detection of received signal
   b) Small scale fading
   c) MSE criterion for infinite length equalizer
   d) Time and frequency domain characteristics of duobinary signal

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