M.E Sem II (Etox) ✓
Elective III / IV. A.C.T. ✓ 22/12/07 ✓

VT Nov 07 64

Con/5793–07. BB–7446 ✓

(3 Hours) [Total Marks : 100

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Assume **suitable** data if **necessary**.
(4) **Figures** to the **right** indicate **full** marks.

1. (a) Show that the decoder for a Hamming code fails if there are two or more transmission errors in received sequence. **6**
(b) Explain the viterbi algorithm for decoding of convolution code. **6**
(c) The general polynomial of a (7,4) cyclic code is $g(x) = 1 + x + x^3$. Find 16 code-words. Also design an encoder for this code and verify its operation using message vector (0 1 0 1). **8**

2. (a) Explain in brief Nyquist criterion for zero ISI. Define roll off factor and vestigial spectrum for it. **10**
(b) Explain effect of signal characteristics on the choice of channel model. **10**

3. (a) Discuss mean square error criterion and MSE algorithm. **14**
(b) Compare linear equilization with adaptive linear equilization schemes. **6**

4. Write detail note on any **two** : **20**
(a) Fading multipath channels
(b) Multicarrier communication system
(c) Kalman filter.

5. (a) Discuss the concept of spread spectrum techniques. **10**
(b) Describe the working of adaptive equilizer with feedback system. **10**

6. (a) Describe diversity techniques for fading multipath channels. **10**
(b) Compare performance of hard decision and soft decision decoding. **10**

7. (a) Explain convergence properties of LMS algorithm. **10**
(b) Explain working of Preset equilizer with neat sketch. What are disadvantages of Preset equilizer. **10**

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