SATHYABAMA UNIVERSITY

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Course & Branch: B.E/B. Tech – CSE/IT
Title of the paper: Principles of Communication Engineering
Semester: III Max. Marks: 80
Sub.Code: 11307/12307 (2002/2003/2004) Time: 3 Hours
Date: 22-11-2006 Session: FN

PART – A (10 x 2 = 20)

Answer ALL the Questions

1. Define power spectral density.
2. Define channel capacity.
3. What are the limitations of square law modulator?
4. What are the differences between FM & AM receivers?
5. Define companding.
6. "Pulse modulation systems are not digital; where as, Pulse-code modulation is" – justify.
7. Define ASK.
8. What are the advantages of non-coherent detection?
9. Define cyclic code.
10. What is the condition for maximum entropy?

PART – B (5 x 12 = 60)

Answer ALL the Questions

11. Explain the properties of autocorrelation with proof.

(or)

12. Write short on
    (i) Random Process
    (ii) Noise Figure
    (iii) Shifting properties of Fourier Transform

13. Explain envelope detector in detail with suitable sketches.

(or)

14. Explain the principle of operation of FM superheterodyne receive with a neat block diagram.

15. Explain the methods for demodulation of PAM signals.

(or)

16. What is quantization error? How does it depend upon the step size? Suggest some methods to overcome the difficulties encountered when the modulating signal amplitude swing is large.

17. Define ASK and explain on-off keying (OOK) method in detail.

(or)

18. Obtain an expression for the probability of error in FSK.

19. Consider a discrete memory less source with alphabet $\{d_0, d_1, d_3\}$ for its output

(i) Apply the Huffman algorithm to this source. Hence show that the average code word length of the Huffman code equals 1.3bits/symbol.

(ii) Let the source extended to order two apply the Huffman algorithm to resulting extended source and show that the average code word length of the new code equals 1,197 second bits/symbol.

(c) Compare the average code word length calculate in part(b) with the entropy of the original source.

(or)

20. Apply the Shannon's fano coding procedure for the following message ensemble. Take m = 2.

X = {x1	x2	x3	x4	x5	x6	x7	x8}
P = {1/4	1/8	1/16	1/16	1/16	1/4	1/16	1/8}