

TEC-604

80

Printed Pages : 3

Paper Code &amp; Roll No. to be filled in your Answer Book

Roll No.

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**B.Tech. (VI - Sem.)**

Even Semester Examination - 2016

**DIGITAL COMMUNICATION***[Time : 3 Hours]**[Maximum Marks :100]***Note:** Attempt **ALL** the questions.

1. Attempt any **FOUR** : (5x4=20)
- (a) Explain the block diagram of Digital Communication.
- (b) List different advantage and disadvantage of digital communication over analog communication.
- (c) Explain average information and derive its formula.
- (d) A DMS source is capable of transmitting three distinct symbols  $m_0$ ,  $m_1$ ,  $m_2$  and corresponding probabilities are  $1/2, 1/4$  and  $1/4$  respectively. Calculate the source entropy. Find the entropy

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(1)

[P.T.O.]

of the second order extension also verify the answer.

(e) What is Line coding? Explain properties of line coding.

2. Write Short Notes on any **FOUR** : (5x4=20)

(a) Coherent and Non-coherent receivers .

(b) Huffman algorithm.

(c) Information and its properties.

(d) Quantization Process.

(e) BW of PCM.

3. Attempt any **TWO** : (10x2= 20)

(a) Explain ISI and discuss the solution for zero ISI.

(b) A sinusoidal voice signal  $x(t)=\cos 600t$  to be transmitted using either PCM or DM. The sampling rate for PCM is 8 KHz and for DM the step height is 31.25mV. The SOE is to be avoided. Assuming that the no of Quantization level for PCM is 64. Calculate the signalling rate of both systems.

(c) Explain BASK in detail also find its probability of error.

4. Attempt any TWO : (10x2=20)

(a) The generator polynomial for a (7, 4) cyclic Hamming code is given by  $G(D)=1+D+D^3$ . Calculate all systematic and non systematic C.W.

(b) What is PN code and discuss its requirements and different properties .

(c) Explain Vterbi algorithm in detail ?

5. Attempt any TWO : (10x2= 20)

(a) Generate Huffman coding for D=3 and D=4 and calculate efficiency and redundancy for following set of symbols also check Kraft inequality condition

$x_i$	$x_1$	$x_2$	$x_3$	$x_4$	$x_5$	$x_6$	$x_7$	$x_8$
$p_i$	0.22	0.20	0.18	0.15	0.10	0.08	0.05	0.02

(b) Explain AMI, Polar quaternary, Unipolar differential phase shift line coding with examples?

(c) Explain Transmitter and Receiver of PCM in Detail?