Sub: - Digital Communication   Date: - 11/02/2019   Sem.:- VI Sem.
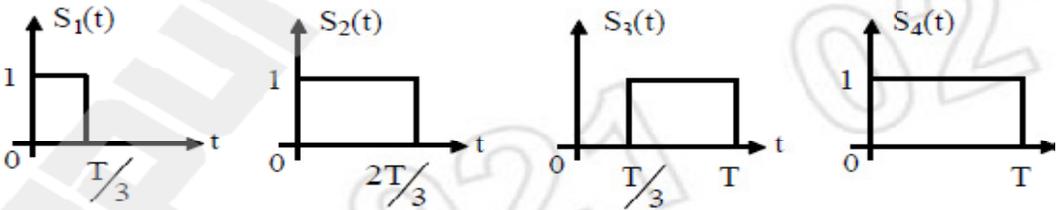
Assignment No-I

Bloom's Taxonomy Levels – 1. Remember   2. Understand   3. Apply   4. Analyze   5. Evaluate   6. Create

Question no 1, 2, 3 are based on CO604.1 - Model the digital communication system using appropriate mathematical techniques.

Question no 4, 5, 6 are based on CO604.2 - Apply the concept of Source coding and decoding techniques used in digital Communication

Que. No	Question	BTL level
Q.1 (a)	State & Prove the central limit theorem	L2
(b)	Explain the terms CDF & PDF. Also state their properties	L2
Q.2 (a)	A random process provides measurements x between the values 0 & 1 with PDF given as fx (x) $=12x3- 21x2+10x$ for $0 \leq x \leq 1$, Determine (i) P [X$\leq$ ½] (ii) P [X $\geq$ ½]	L3
(b)	Explain Gram Schmitt Orthogonalization procedure.	L2
Q.3 (a)	Given the set of signals S1 (t), S2 (t), S3 (t) and S4 (t) as shown in figure. Find ortho -normal basis functions for this set of signals using Gram-Schmidt orthogonalization procedure	L3
(b)	Explain Matched Filter Receiver in detail	L2
Q.4 (a)	Defiine the terms (i) information (ii) Entropy (iii) Redundancy	L1
(b)	A zero memory-less source emits m1 and m2 with probabilities 0.8 and 0.2 respectively. Find the optimum binary code for this source as well as for its 2nd and 3rd order extension. Determine code efficiency in each case.	L3
Q.5 (a)	Explain the concept of scalar & vector quantization	L2
(b)	Encode the following binary sequence using Lempel - Ziv coding scheme 111010011000101. Assume that binary symbols 0 & 1 are already there in the code book.	L3
Q.6 (a)	Draw & explain ADPCM encoder & Decoder.	L3
(b)	Explain Adaptive transform coding	L2

Last date for submission is 22/02/2019

S. A. Bagal
Subject Teacher