Enrolment No:

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION
B.E. 6th SEMESTER
MID SEMESTER EXAMINATION February - 2015

Subject Code: 601 **Branch: EC**
Subject Name : Digital Communication **Total Marks: 30**
Date : 27/02/2015 **Time: 12.00 PM to 1.30 PM**

Instructions: - All questions are compulsory.
- Figures to the right indicate full marks.
- Make suitable assumption, wherever necessary.

Que. 1	**Answer the followings**	**(08)**
A)	Explain the sampling theorem.	(02)
B)	What is aliasing and how to over aliasing?	(03)
C)	What is Quantization and What sort of Quantization used in delta modulation?	(03)
Que. 2	**Answer the following questions.**	**(10)**
A)	Derive the expression for Bernoulli Trials	(3)
B)	In a random experiment, a trial consists of 4 successive tosses of a coin. If we design a random variable 'x' as the no. of heads appearing in a trial, determine P ($x=x_i$) and CDF $F_x(x)$.	(7)
	OR	
A)	Define Random variable and Derive the expression for Conditional Probability.	(5)
B)	Write short note on Central Limit theorem.	(5)
Que. 3	**Answer the following questions.**	**(12)**
A)	Explain Channel capacity of discrete memory less channel	(6)
B)	A memory less source emits messages m1 to m6 with probabilities 0.30, 0.25, 0.15, 0.11, 0.10, 0.09 respectively. Find the Length of this code (L), entropy of source (H), Code efficiency and redundancy.	(6)
	OR	
A)	What is Entropy and redundancy? Also, briefly explain Shannon's equation for error free communication.	(5)
B)	A zero memory source emits messages m1 and m2 with probabilities 0.8 and 0.2 respectively. Find the optimum compact binary code for this source as well as for its second and third order extension (that is, for N = 2 and 3). Determine the code efficiency in each case.	(7)

*****All The Best*****