

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:2161001****Date:04-07-2023****Subject Name:Digital Communication****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARK
Q.1	(a) Draw and explain block diagram of digital communication system.	03
	(b) Write a short note on Central Limit theorem.	04
	(c) What is line coding? Explain various types of line coding in Brief.	07
Q.2	(a) Define noise temperature, Noise bandwidth and noise figure.	03
	(b) Explain the difference between Amplitude Modulation and Amplitude Shift Keying.	04
	(c) Write a short note on differentially encoded PSK.	07
	OR	
	(c) Write a short note on M-ary PSK.	07
Q.3	(a) What is sampling? Explain various types of sampling in brief.	03
	(b) Explain quantization of waveform using suitable waveform.	04
	(c) Write a short note on delta modulation.	07
	OR	
Q.3	(a) How is slope overload reduced in ADM?	03
	(b) State and explain Sampling theorem.	04
	(c) Write a short note on PCM.	07
Q.4	(a) Define: Independent event, Certain event, mutually exclusive event.	03
	(b) Give comparison between source coding and channel coding.	04
	(c) What is CDF? State and explain various properties of CDF.	07
	OR	
Q.4	(a) Define entropy, coding efficiency, Redundancy.	03
	(b) What is random variable? Explain various types of random variable?	04
	(c) What is Chebyshev's inequality? Prove this inequality.	07
Q.5	(a) Explain S/N ratio to Bandwidth tradeoff for maximum limit of channel capacity.	03
	(b) Write a short note on Shannon's theorem.	04
	(c) Derive equation for channel capacity of discrete memory less channel.	07
	OR	
Q.5	(a) What is burst error? Name some burst error detecting and correcting codes.	03
	(b) Explain coding technique in convolution code with the help of suitable example.	04
	(c) Explain linear block code with the help of suitable example/	07
