GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII EXAMINATION – SUMMER 2025

Subject Code:3171615   **Date:08-05-2025**

Subject Name:Data Compression

Time:02:30 PM TO 05:00 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.**

Q.1	**(a)**	Define the following terms: (1) Compression Ratio (2) Rate (3) Distortion Measure	**03**
	(b)	Explain different compression techniques with example.	**04**
	(c)	Explain Modeling and Coding with suitable example.	**07**
Q.2	**(a)**	List out Application of Data Compression.	**03**
	(b)	Write the Difference between Lossy compression and Lossless compression.	**04**
	(c)	Explain CALIC with example.	**07**
		OR	
	(c)	Explain uniquely decodable code with example.	**07**
Q.3	**(a)**	Compare Arithmetic and Huffman Coding.	**03**
	(b)	What is Golomb Code? Explain with example.	**04**
	(c)	Explain LZ77 algorithm in detail.	**07**
		OR	
Q.3	**(a)**	Write procedure to decode Arithmetic Coding Tag.	**03**
	(b)	Explain Burrows-Wheeler Transform with example.	**04**
	(c)	What is LZW compression? Explain with example.	**07**
Q.4	**(a)**	Discuss application of Huffman Coding.	**03**
	(b)	Differentiate static and adaptive dictionary coding scheme.	**04**
	(c)	Describe prediction with partial match with example.	**07**
		OR	
Q.4	**(a)**	Discuss Diagram Coding with example.	**03**
	(b)	Discuss advantages of Vector Quantization over Scalar Quantization.	**04**
	(c)	Explain Context Based Compression.	**07**
Q.5	**(a)**	Discuss Laplacian Distribution.	**03**
	(b)	Differentiate Uniform Quantization and Non-Uniform Quantization.	**04**
	(c)	What is Adaptive Quantization? Explain various approaches of Adaptive Quantization.	**07**
		OR	
Q.5	**(a)**	Define SNR and Conditional Entropy.	**03**
	(b)	Write short note on JPEG standard.	**04**
	(c)	Explain Vector Quantization? Write down the procedure of Vector Quantization.	**07**

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