Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII • EXAMINATION – SUMMER 2013

Subject Code: 181602 Date: 13/05/2013

Subject Name: Data Compression

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.**

Q.1	**(a)**	What is Data Compression? Differentiate between Lossless compression techniques and Lossy compression techniques.	**07**
	(b)	Explain in details Shannon-Fano algorithm.	**07**
Q.2	**(a)**	Explain modeling, coding and entropy with the help of suitable examples.	**07**
	(b)	Describe the procedure for building the Huffman tree with an example.	**07**
		OR	
	(b)	Why adaptive Huffman coding is prefer over Huffman code? List out and explain the enhancements.	**07**
Q.3	**(a)**	Explain the quantization in compression and show the quantization in JPEG.	**07**
	(b)	List out and explain the different parameters used to evaluate the performance of any compression algorithm.	**07**
		OR	
Q.3	**(a)**	Differentiate static and adaptive dictionary coding scheme in details.	**07**
	(b)	Explain the concept of sliding window scheme used in compression.	**07**
Q.4	**(a)**	Explain by an example how the size of the window affects the performance of LZ77 algorithm.	**07**
	(b)	Explain Arithmetic coding with suitable example.	**07**
		OR	
Q.4	**(a)**	Explain LZSS compression and what are the improvements of LZSS on LZ77? Explain why it is better.	**07**
	(b)	Describe the audio compression with proper diagrams.	**07**
Q.5	**(a)**	Write a shot notes: i) JPEG Compression ii) Sibling Property	**07**
	(b)	Describe how the DCT is used in MP3 audio coding and decoding.	**07**
		OR	
Q.5	**(a)**	What is the significance of Discrete Cosine Transformation (DCT) in JPEG base line algorithm?	**07**
	(b)	What are the difference between Huffman coding and Shannon fano coding? Prove by a suitable example that Huffman coding is better than Shannon fano coding.	**07**

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