## **GUJARAT TECHNOLOGICAL UNIVERSITY** BE - SEMESTER-VIII • EXAMINATION – SUMMER 2013

| Subj                   | ect (  | Code: 181602 Date: 13/05/2013   |          |
|------------------------|--|---|----------|
| Subj<br>Time<br>Instru | Subject Name: Data Compression<br>Time: 10:30 am TO 01:00 pm Total Marks:<br>Instructions: |   | )        |
| inști u                | 1.<br>2.<br>3.   | Attempt all questions.<br>Make suitable assumptions wherever necessary.<br>Figures to the right indicate full marks.  |          |
| Q.1                    | (a)<br>(b)   | What is Data Compression? Differentiate between Lossless compression techniques and Lossy compression techniques.   | 07<br>07 |
|                        | (0)  | Explain in details Shannon-1 and argorithm.   | 07       |
| Q.2                    | (a)<br>(b)   | Explain modeling, coding and entropy with the help of suitable examples.<br>Describe the procedure for building the Huffman tree with an example.<br><b>OR</b>                                | 07<br>07 |
|                        | (b)  | Why adaptive Huffman coding is prefer over Huffman code? List out and explain the enhancements.   | 07       |
| Q.3                    | (a)<br>(b)   | Explain the quantization in compression and show the quantization in JPEG.<br>List out and explain the different parameters used to evaluate the performance of<br>any compression algorithm. | 07<br>07 |
|                        |  | OR  |          |
| Q.3                    | (a)<br>(b)   | Differentiate static and adaptive dictionary coding scheme in details.<br>Explain the concept of sliding window scheme used in compression.   | 07<br>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:   | 07       |
|                        | <b>(L)</b>   | 1) JPEG Compression 11) Sibling Property  | 07       |
|                        | (D)  | OR  | 0/       |
| Q.5                    | (a)  | What is the significance of Discrete Cosine Transformation (DCT) in JPEG base   | 07       |
|                        | (b)  | What are the difference between Huffman coding and Shannon fano coding?<br>Prove by a suitable example that Huffman coding is better than Shannon fano coding.                                | 07       |

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