

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VIII (OLD) EXAMINATION – SUMMER 2019****Subject Code: 181602****Date: 09/05/2019****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 the need of data compression? Differentiate lossy compression with lossless compression. **07**  
(b) Explain Shannon Fano compression technique with the help of an example. **07**
- Q.2** (a) What is Modeling and Coding? Write a note on statistical modeling. **07**  
(b) What is entropy encoding? Explain the significance of it in quantization? **07**
- OR**
- (b) What do you understand by information and entropy? Find the first order entropy of an alphabet  $A = \{a_1, a_2, a_3, a_4\}$  where  $p(a_1) = p(a_2) = p(a_3) = p(a_4) = 1/4$ . **07**
- Q.3** (a) Compare and contrast:  
1. LZ77 and LZSS techniques. **07**  
2. Speech compression and Text compression.  
(b) List the various applications of Huffman coding technique. Why adaptive Huffman coding is prefer over Huffman code? **07**
- OR**
- Q.3** (a) Explain various types of dictionary techniques of Encoding. Where they can be used? **07**  
(b) Use LZ77 technique to encode "WEDWEWEEWET" string. **07**
- Q.4** (a) What is quantization? Why we do quantization in JPEG compression? **07**  
(b) Explain LZW coding scheme with proper example. **07**
- OR**
- Q.4** (a) Write a short note on JPEG compression. **07**  
(b) Find the frequency of each character and Encode the following string using Huffman Coding Method "beep boop beer!" **07**
- Q.5** (a) Explain how we can implement DCT in JPEG compression with suitable example. **07**  
(b) What is arithmetic coding compare it with Huffman coding and also list the significance of each. **07**
- OR**
- Q.5** (a) Describe the audio compression technique with proper diagrams. **07**  
(b) Write a note on followings: **07**  
1. Inverse DCT.  
2. Adaptive coding.

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