

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER – VIII. EXAMINATION – WINTER 2016

Subject Code: 181602**Date: 20/10/2016****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.

- Q.1** (a) What is data compression? Define lossless and lossy data compression differentiate between these two. **07**
 (b) Explain modeling and coding with suitable example. **07**
- Q.2** (a) Explain Shannon-Fano Algorithm for data compression **07**
 (b) Design Huffman code using Huffman tree for the following symbols. **07**
- | Symbol | A | B | C | D | E | F |
|--------|----|----|----|---|---|---|
| Count | 30 | 15 | 10 | 8 | 5 | 2 |
- OR**
- (b) For which types of data adaptive Huffman coding is prefer over Huffman code? List out and explain the enhancements **07**
- Q.3** (a) Explain Arithmetic Coding with example and compare it with Huffman coding. **07**
 (b) What is Entropy? Give the significance of entropy in information. Find the first order entropy over an alphabet $A=\{a_1, a_2, a_3, a_4\}$ where $p(a_1)=1/2, p(a_2)=1/4, p(a_3)=p(a_4)=1/8$ **07**
- OR**
- Q.3** (a) Explain LZ77 with suitable example. **07**
 (b) Discuss the modification carried out in LZSS compare to LZ77 **07**
- Q.4** (a) Explain RLE with example. **07**
 (b) What is Dictionary based coding? Differentiate static and adaptive dictionary. **07**
- OR**
- Q.4** (a) Explain LZW coding scheme. **07**
 (b) Explain using suitable diagram the audio compression technique. **07**
- Q.5** (a) Explain usage of Discrete Cosine Transformation (DCT) in JPEG. **07**
 (b) Write short note on PNG. **07**
- OR**
- Q.5** (a) Explain silence compression. **07**
 (b) Write short note on JPEG. **07**
