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Paper Id: 110241 Roll No.

B TECH
(SEM-VIII) THEORY EXAMINATION 2018-19
DATACOMPRESSION

Time: 3 Hours *Total Marks: 100*

Note: **1.** Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.** **2 x 10 = 20**

a. Is Huffman coding is a lossless or lossy compression? Write applications of Huffman coding.
b. What is a composite source model?
c. What are prefix codes?
d. Explain JBIG standard.
e. Explain entropy.
f. Define compression ratio.
g. Determine whether the code {0, 10,110,111} is uniquely decodable or not.
h. Which compression technique is used in "compress" command of Unix operating systems?
i. Explain uniform quantizer.
j. What is entropy coded quantization?

SECTION B

2. **Attempt any *three* of the following:** **10 x 3 = 30**

a. What are the advantages of vector quantization over scalar quantization? Explain with the help of an example.
b. What is Data Compression? Why we need it? Explain Compression and Reconstruction with the help of block diagram.
c. Write short note on Golomb codes & Tunstall codes.
d. What do you mean by Quantization? Describe the quantization problem with the help of an example in detail.
e. Explain various types of dictionary based coding techniques.

SECTION C

3. **Attempt any *one* part of the following:** **10 x 1 = 10**

(a) What do you mean by lossless compression and lossy compression? Compare lossless compression with lossy compression
(b) What do you understand by information? Give an alphabet A={a,a2,a3,a4},find the first order entropy of the following: P(a1)=1/2, P(a2)=1/4, P(a3)=P(a4)=1/8.

4. **Attempt any *one* part of the following:** **10 x 1 = 10**

(a) Given the eight symbols A, B, C, D, E, F, G, and H with probabilities 1/30, 1/30,1/30, 2/30, 3/30, 5/30, 5/30, and 12/30:
i) Draw the Huffman tree for these symbols.
ii) Compute the average no. of bits/symbol.
(b) Differentiate between adaptive Huffman coding and Huffman coding?

5. **Attempt any *one* part of the following:** **10 x 1 = 10**

(a) Compare and contrast LZ77 and LZ78 with examples

(b) Discuss the steps involved in Basic Algorithm for Prediction with Partial Match. (PPM).

6. **Attempt any *one* part of the following:** **10 x 1 = 10**

(a) Explain the various distortion criteria used in lossless schemes.

(b) Differentiate between uniform and non uniform quantization.

7. **Attempt any *one* part of the following:** **10 x 1 = 10**

(a) Differentiate between scalar quantization and vector quantization.

(b) Explain the steps of Lindo-Buzo-Gray algorithm.