Printed pages: 02 **Sub Code: ECS077**

Paper Id: | 1 | 0 | 1 | 6 | **Roll No.** | | | | | | | | | | |

B.Tech.
(SEM VII) THEORY EXAMINATION 2017-18
DATA COMPRESSION

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 x10 = 20

a. What is data compression & why it is needed.
b. What are the measures of performance of data compression algorithm?
c. Write short note on Rice codes.
d. What are non binary Huffman codes?
e. Differentiate between Huffman & arithmetic coding.
f. What is graphic interchange format (GIF)?
g. Explain Gaussian distribution probability model.
h. What is entropy coded quantization.
i. Differentiate between vector quantization & scalar quantization
j. Define pyramid vector quantization.

SECTION B

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

a. Explain modeling & coding with the help of suitable examples.
b. Explain Huffman coding algorithm & differentiate between conventional Huffman coding & adaptive Huffman coding.
c. What is adaptive dictionary technique of data compression? Explain LZ 77 & LZ 78 approaches.
d. What is scalar quantization algorithm? Also describe the quantization problem with the help of example.
e. Describe the Linde-Buzo Gray algorithm in detail & what Empty cell problem is**?**

SECTION C

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

(a) (i) Explain two state Markov model for binary images.
(ii) Explain probability model & composite source model.
(b) Explain coding with reference to data compression approaches. Also explain uniquely decodable codes & prefix codes with suitable example.

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

(a) (i) Write short note on Golomb codes & Tunstall codes
(ii) Explain redundancy code with the help of suitable example.
(b) Discuss the various applications of Huffman coding & list down steps required in encoding procedure?

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

(a) What are the various applications of arithmetic coding & also explain how to code a sequence.

(b) (i) Explain Facsimile encoding.
(ii) 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) Describe uniform quantization & non- uniform quantization .Also differentiate among them with the help of example.

(b) What is rate distortion theory? Explain rate distortion function for binary source with the help of an example..

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

(a) Describe tree structured vector quantizers in detail. Also explain its design.

(b) Write short notes on:-
(i) Structure vector quantization
(ii) Lattice vector quantizers