ROLL NO. | | | | | | | | | | |

G.L. BAJAJ INSTITUTE OF TECHNOLOGY & MANAGEMENT
GREATER NOIDA
B. TECH (VIII) – (CSE)(All Sections)
ONLINE PRE-UNIVERSITY TEST (EVEN SEM 2019-20)
(RCS-087) Data Compression

Faculty Name: Dr. Satendra Singh, Anju Gera, Khushboo Yadav, Vinod Choudhary, Pranav Shrivastava, Aman Kumar Pandey

Time: 2:00Hrs **Max. Marks: 50**

Note: **(i) The answer should be submitted within 02 Hrs and 15 Minutes**
(ii) Diagram should be neat and clean.
(iii) Mention Question number/section correctly.
(iv) Be precise in your answer.

Course Outcomes:

Following are the course outcomes of the subject:-

CO Code	Course Outcome(CO)	Bloom's Level
CO1	Understand the basic concepts of data compression, Entropy and models for data compression.	**L2-Understand**
CO2	Apply various coding algorithms and their application.	**L3- Apply**
CO3	Apply different Lossless Compression & Image Compression Schemes.	**L3- Apply**
CO4	Understand various Quantization Algorithm.	**L2- Understand**
CO5	Understand various concept of scalar, vector quantization and their applications.	**L2- Understand**

Section: A

1. Attempt all questions **(2 Marks *5=10)**

(a) Define Data Compression. Discuss the need for data compression **(From CO- 1, L2)**
(b) Explain minimum variance Huffman code. **(From CO- 2, L2)**
(c) Differentiate between GIF image compression and JPEG image compression techniques. **(From CO- 3, L2)**
(d) List the various distortion criteria used in lossless schemes. **(From CO- 4, L1)**
(e) Explain the Scaler quantization in brief? **(From CO- 5, L2)**

Section: B

Attempt any four question **(5 Marks *4= 20)**

(a) Discuss relationship between modeling and coding. Explain with the examples. **(From CO- 1, L2)**
(b) What is Tunstall code? Design 3-bit Tunstall code for a memory less source with the following alphabet: S={A,B,C} with P(A) = 0.6, P(B) = 0.3, P(C)=0.1. **(From CO- 2, L4)**
(c) Explain the difference between Huffman coding and arithmetic coding. **(From CO- 3, L2)**
(d) What do you understand by uniform quantizer? How uniform quantization of a uniformly distributed source and uniform quantization of non-uniform sources is done? **(From CO- 4, L2)**
(e) Explain the steps of the Linde-Buzo-Gray algorithm. **(From CO- 5, L2)**

3. Attempt any two question **(10 Marks *2= 20)**

(a) Discuss LZW Compression. Demonstrate the encoding for given initial dictionary consisting of the alphabet "A,B,C….Z", encode the following message using the LZW algorithm: TOBEORNOTTOBEORTOBEORNOT

(From CO- 3, L2)

(b) What do you understand by uniform quantizer? How uniform quantization of a uniformly distributed source and uniform quantization of non-uniform sources is done? Explain the various approaches to adapting the quantizer parameters. **(From CO- 4, L2)**

(c) **i)** What is Quantization? Explain additive noise model of a quantizer?

ii) State the difference between Uniform quantizer and non-uniform quantizer. **(From CO- 5, L2)**

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