

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATIONS- 2023

B.Tech-5th Semester (CSE/IT/ECE)

COURSE CODE (CREDITS): 18B1WCI532

MAX. MARKS: 35

COURSE NAME: Data Compression

COURSE INSTRUCTORS: Dr. Amit Kumar

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

- Q1. Encode and decode the following given sequence with LZW and show the dictionary representation for all the following entries:
wabbaϕ wabbaϕ wabbaϕ wabbaϕ woϕwoϕwoϕwoϕ
- | Index | Entry |
|-------|-------|
| 1 | ϕ |
| 2 | A |
| 3 | B |
| 4 | O |
| 5 | W |
- 7
- Q2. How we can generate binary tags to the abovementioned probability.
CO3 Encode and decode of the following sequence of input using BWT:
Text: M I S S I S S I P P I
- 7
- Q3. What are the Prefix code and assign code words to the following alphabet using Huffman coding and compare its performance with entropy. Also show that the minimum variance Huffman codes are better than other codes. $A = \{a_1, a_2, a_3, a_4, a_5\}$;
CO3 $P(a_1) = P(a_3) = 0.2$; $P(a_2) = 0.4$; $P(a_4) = P(a_5) = 0.1$;
- 7
- Q4. What is the significance of quantization in the lossy compression and how the distortion is computed through mean squared error. Also specify the utility of uniform, non-uniform and adaptive quantifiers with a suitable example.
CO4
- 7
- Q5. Suppose vector quantization error is high then how to minimize the error of the following data through the LBG algorithm step by step.
CO5
- 7

Height	44	59	62	65	72	72
Weight	41	119	114	120	180	175