JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2023

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

COURSE CODE (CREDITS): 18B1WCI532                           MAX. MARKS: 15

COURSE NAME: Data Compression

COURSE INSTRUCTORS: Dr. Amit Kumar Jakhar                   MAX. TIME: 1 Hour

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.  What is the concept of Information Theory and Entropy? Find the    3
CO1  Entropy of the following probabilities: <1/2, 1/4, 1/8>.

Q2.  Determine whether the following codes are uniquely decodable:      3
CO2      a) {0, 01, 11, 111}
         b) {0, 01, 110, 111}

Q3.  Design the Huffman code for the following letters with the also    3
CO1  calculate the difference between Entropy and average length of
     Huffman code.

| Symbol | A | B | C | D | F |
|---|---|---|---|---|---|
| Probability | 0.4 | 0.2 | 0.2 | 0.1 | 0.1 |

Q4.  Show the process of encoding and decoding with Adaptive Huffman    3
CO2  Coding for a message [a a r d v a r]

Q5.  Generate a Golomb Code up to 15 for m=5 with unary code and        3
CO2  different code.