

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

B.Tech-V Semester (CSE/IT)

COURSE CODE (CREDITS): 18B1WCI532 (2)

MAX. MARKS: 25

COURSE NAME: DATA COMPRESSION

COURSE INSTRUCTORS: Praveen Modi

MAX. TIME: 1:30 Hr

Note: All questions are compulsory. Marks are indicated against each question in square brackets. Write the answer of the question belonging to the same part in the same order.

- Q1. (a) Write the basic requirement for Huffman Encoding technique? [2] (CO1)
(b) Find the compressed message and entropy if $P(a) = 0.20$, $P(b) = 0.15$, $P(c) = 0.35$, $P(d) = 0.25$, $P(e) = 0.05$ for message "decade" using Huffman Encoding technique? [2+1] (CO2)
- Q2. (a) What are the advantages of arithmetic encoding method over tunstall encoding method? [1](CO3)
(b) Find the arithmetic code for $P(a) = 0.15$, $P(b) = 0.04$, $P(c) = 0.26$, $P(d) = 0.05$, $P(e) = 0.50$ of the symbols for message "decade"? [4] (CO3)
- Q3. (a) Find the Golumb Code for $N = 53, 47, 39, 61, M = 13$? [2] (CO3)
(b) What will be the tunstall codes $P(a) = 0.52$, $P(b) = 0.27$, $P(c) = 0.15$, $P(d) = 0.06$? [3] (CO3)
- Q4. (a) Write the comparison between LZ77 & LZ78 dictionary based method? [1] (CO4)
(b) A sequence is encoded using the LZ77 algorithm. Given that $C(a) = 1$, $C(b) = 2$, $C(r) = 3$, $C(t) = 4$. Decode the following sequence of triples. $\langle 0, 0, 3 \rangle \langle 0, 0, 1 \rangle \langle 0, 0, 4 \rangle \langle 2, 8, 2 \rangle \langle 3, 1, 2 \rangle \langle 0, 0, 3 \rangle \langle 6, 4, 4 \rangle \langle 9, 5, 4 \rangle$ Assume that the size of the window is 20, the size of the look-ahead buffer is 10? [4] (CO4)
- Q5. (a) Which is the 10th index entry in the encoding table using LZ78 for message "bcababacbbcababacbabbcba"? [2.5] (CO4)
(b) What will be the last entry in the encoding table using LZ78 for message "cdabadcaabddcb"? [2.5] (CO4)