VIT
Vellore Institute of Technology

School of Computer Science and Engineering

Fall Semester 2024-25

Continuous Assessment Test – 1

SLOT: F1+TF1

Programme Name &Branch : 5 year Integrated M. Tech& MIC/MID

Course Name & code: CSI3019 - Advanced Data Compression Techniques

Class Number (s): VL2024250101860

Faculty Name (s): Dr. N.Balaji

Exam Duration: 90 Min. **Maximum Marks: 50**

General instruction(s):

1. Students are allowed to use a straightforward non-programmable scientific calculator in the examinations.
2. The exchange of calculators is strictly prohibited. Any other specific instruction

Q.No.	Question	Max Marks
1	**a) Describe in detail about the lossy and lossless compression.**	**5**
	b) Keep the other graphic elements simple **Calculate the entropy value for the above sentences**	5
2	**a) Consider a source X having 6 unique symbols = {X0, X1, X2, X3, X4, X5}. Construct prefix code for these sequences and the average code length of the constructed prefix code should be minimal and prove the same.(Assume that the probability distribution of these symbols is the same)**	5
	b) Check the following codes satisfy the Kraft-McMillan Inequality and prefix property. **i) {0, 01, 11, 111}** **ii) {11, 10, 110, 111, 1110}** **iii) {0,1,10,110,11,1110,1000}**	5

3	a) Explain the role of the Markov model in data compression. Justify your answer with a suitable example.	7
	b) Examine the given sequence of number and identify the suitable Model to achieve a better compression ratio. 27 28 29 28 26 27 29 28 30 32 34 36 38	3
4.	Given M1={ Well done is better than well said} and M2={ Try not to become a man of success} encode the following M1 and M2 using Shannon Fano Algorithm. Calculate the efficiency of the M1 and M2.	10
5.	a) Given S = {A, B, C, D, E, F, G, H} and the symbols' occurring probabilities 0.25, 0.2, 0.2, 0.18, 0.09, 0.05, 0.02, 0.01, construct a canonical Huffman code for this input.	7
	b) Calculate the compression ratio, Redundancy and the efficiency of the above generated code.	3