



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.: 23BCT0044

NAME OF THE SCHOOL
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2024-2025

SLOT: A1+TA1

Programme Name & Branch : B.Tech CSE
 Course Code and Course Name : BCSE204L / Design and Analysis of Algorithms
 Faculty Name(s) : ALL
 Class Number(s) : ALL
 Date of Examination : 27.1.25
 Exam Duration : 90 minutes Maximum Marks: 50

General instruction(s):

- Answer All Questions

Q. No	Question	M	CO	BL
1.	“we are trying to learn design and analysis of algorithm” for the given phrase construct the Huffman coding and generate the code for “Tester”. Compare the length of code between fixed and variable length code for the given word “Tester”.	10	1	2
2.	Develop an algorithm using divide and conquer strategy to multiply two integers 38409 and 83329. Generate the recurrence relation from the algorithm and compute the time complexity. Also compute how much time it will take to multiply the given two integers.	10	1	3
3.	a) Apply master theorem to calculate the time complexity of the recurrence relation $T(n) = 2T(n/4) + \sqrt{n} + 42$. Illustrate the evaluation step by steps	4	1	3
	b) Apply backward substitution to enable the time complexity for the recurrence relation $T(n) = 2T(n/2) + n \log n$.	6		
4.	Given a chain of matrix $A_1: 5 \times 4$ $A_2: 4 \times 3$ $A_4: 5 \times 2$ $A_3: 3 \times 5$ $A_5: 2 \times 4$ where A_i has dimensions $p_{i-1} \times p_i$, fully parenthesize the product $A_1 \cdot A_2 \cdots A_n$ in a way that minimizes the number of scalar multiplications.	10	2	1
5.	Given a set of positive integers $\{3, 2, 5, 7, 6, 8, 10, 4\}$ and a target value “20”, determine whether some subset has a sum equal to the target.	10	2	3
