

		Register Number		2	1	C	S	R	0	1	4
VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY											
(An Autonomous Institution, Affiliated to Anna University, Chennai)											
Continuous Assessment Test - I						QP Set		1		Regulations-2018	
Programme		B.E - CSE SIT		Semester: 4		Max. Marks: 60		Duration		2.0 Hrs	
Course Code & Title:		21ITT42 & Design and Analysis of Algorithms									
Class: 21CS4A&B 21ITT4A&B		Date: 14.03.2023				Time: 10.30 am - 12.30 pm					
Knowledge Levels (KL)		K1 - Remembering			K3 - Applying			K5 - Evaluating			
		K2 - Understanding			K4 - Analysing			K6 - Creating			

Part A - 12x2 = 24 Marks

- | | | | |
|-----|---|-----|----|
| 1. | List down important problem types. | CO1 | K1 |
| 2. | How to identify the basic operation of an algorithm? | CO1 | K2 |
| 3. | Write an algorithm to check whether the given number is Armstrong or not. | CO1 | K2 |
| 4. | State Master's theorem. | CO1 | K1 |
| 5. | Write the general plan for Empirical analysis of algorithms. | CO1 | K1 |
| 6. | Apply selection sort to sort the given elements; 7 5 8 2 9 1 4 3 6 | CO2 | K3 |
| 7. | Show various passes to sort 5, 1, 4, 2, 8 using bubble sort. | CO2 | K3 |
| 8. | Multiply 26 X 35 using divide and conquer strategy. | CO2 | K3 |
| 9. | Enlist the three major variations of decrease and conquer strategy. | CO2 | K1 |
| 10. | Compare Linear search with Binary search technique. | CO2 | K2 |
| 11. | Differentiate feasible solution from an optimal solution. | CO3 | K2 |
| 12. | What is minimum spanning tree? Is it unique for a graph? | CO3 | K2 |

Part B - 3x12 = 36 Marks

- | No. | Question | Marks | CO | KL |
|-----|---|-------|-----|----|
| 13. | (a) (i) Explain various types of Asymptotic notations in detail. | 6 | CO1 | K2 |
| | (ii) Illustrate the steps involved in mathematical analysis of non recursive algorithm with a suitable example. | 6 | CO1 | K2 |
| OR | | | | |
| 13. | (b) (i) Explain the Tower of Hanoi problem and derive its efficiency. | 6 | CO1 | K2 |
| | (ii) Solve: (i) $F(n) = F(n-1) + 2n - 1$; $F(0) = 0$
(ii) $T(n+1) = 2 * T(n)$; $T(0) = 1$ | 6 | CO1 | K3 |
| 14. | (a) (i) Explain Quick sort algorithm with an example. Derive the time complexity of the algorithm. | 8 | CO2 | K2 |
| | (ii) Apply merge sort to sort the list: 32, 25, 17, 8, 41, 1, 74, 22 | 4 | CO2 | K3 |

OR

