Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (OLD) - EXAMINATION – SUMMER 2018

Subject Code:150703 **Date:30/04/2018**

Subject Name:Design and Analysis of Algorithms

Time:02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain why analysis of algorithm is important? Explain: Worst Case, Best Case & Average Case Complexity with suitable example.	**07**
	(b)	Explain linear inequality and linear equations.	**07**
Q.2	**(a)**	Explain how multiplication of large integers can be done efficiently by using divide and conquer method.	**07**
	(b)	Write an algorithm for selection sort and show that the time complexity of this algorithm is quadratic.	**07**
		OR	
	(b)	Why amortized analysis is required? Explain any two method of amortized analysis with suitable example.	**07**
Q.3	**(a)**	Write Quick sort algorithm and derive the worst case time complexity of quick sort algorithm.	**07**
	(b)	Explain Knapsack problem using greedy method with example.	**07**
		OR	
Q.3	**(a)**	Explain LCS problem using dynamic programming with suitable example.	**07**
	(b)	Design and explain Dijkstra's shortest path algorithm	**07**
Q.4	**(a)**	Explain Backtracking concept and apply the same on 8-queen problem.	**07**
	(b)	Describe an assembly line scheduling problem and give dynamic programming algorithm to solve it.	**07**
		OR	
Q.4	**(a)**	What is Articulation Point? Explain how to find an Articulation Point of the graph with suitable example.	**07**
	(b)	Explain Branch and Bound technique with suitable example.	**07**
Q.5	**(a)**	Explain naive string matching algorithm with example.	**07**
	(b)	Explain the concept of P, NP and NP-complete problem	**07**
		OR	
Q.5	**(a)**	Explain Breadth First Traversal Method for Graph with algorithm.	**07**
	(b)	Explain Floyd's algorithm for finding out shortest path with example.	**07**

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