

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**
