Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V EXAMINATION - WINTER 2015

Date:08/12/2015

Subject Code: 150703

Ti	me: structi	t Name: Design and Analysis of Algorithms 10:30am to 1:00pm Total Marks: 70 ions: L. Attempt all questions. L. Make suitable assumptions wherever necessary.	
		3. Figures to the right indicate full marks.	
Q.1	(a)	Answer the following. (i)Explain why analysis of algorithms is important? Explain: Worst Case, Best Case & Average Case Complexity.	07
	(b)	(ii) Define: Optimal Solution, Feasible solution, Principle of Optimality. What is Divide and Conquer Technique? Give the use of it for Binary Searching Method. Also give its Time Complexity.	07
Q.2	(a)	Give the properties of Heap Tree. Sort the following data using Heap Sort	07
	(b)	MST with example.	07
	(b)	OR Explain Prim's Algorithm to find Minimum Spanning Tree with example. What is	07
	(0)	its Time Compexity?	U /
Q.3	(a)	Solve Making Change problem using Dynamic Programming. (denominations:	07
	(b)	d1=1,d2=4,d3=6). Give your answer for making change of Rs. 8. Find Longest Common Subsequence using Dynamic Programming Technique with illustration X={A,B,C,B,D,A,B} Y={B,D,C,A,B,A} OR	07
Q.3	(a)	Explain the characteristics of Greedy algorithms. Compare Greedy algorithms	07
	(b)	with Dynamic Programming Method giving example of Knapsack Problem. Explain Chained Matrix Multiplication with example.	07
Q.4	(a)	Explain Backtracking Method. What is N-Queens Problem? Give solution of 4-Queens Problem using Backtracking Method.	07
	(b)	Explain: Acyclic Directed Graph, Articulation Point, Dense Graph, Breadth First Search Traversal, Depth First Search Traversal. OR	07
Q.4	(a)	Write a program/algorithm of Merge Sort Method. What is Complexity of it?	07
	(b)	Explain use of Branch & Bound Technique for solving Assignment Problem.	07
Q.5	(a)	What is Finite Automata? Explain use of finite automata for string matching with suitable example.	07
	(b)	Explain in Breif: P Problem, NP Problem, NP Hard Problem, NP Complete Problem.	07
		OR	
Q.5	(a)	Explain Rabin- Carp method for string matching and also give the algorithm.	07

Travelling Salesman Problem, Recurrence Equations, Relation, Approximation Algorithms.
