Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2016

Subject Code:173205 **Date:05/05/2016**

Subject Name:Design & Analysis of Algorithm/ Computer Algorithm (Elective)

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)**	Define Algorithm. Write and Explain all asymptotic notations in detail.	**07**
	(b)	Explain use of Divide and Conquer method for binary search. Give its complexity.	**07**
Q.2	**(a)**	(i) Give the difference between greedy and dynamic method. (ii) Write the recurrence equation for Tower of Hanoi and give its complexity.	**07**
	(b)	Write and explain quick sort algorithm. Derive its complexity.	**07**
		OR	
	(b)	Write and explain marge sort algorithm. Derive its complexity.	**07**
Q.3	**(a)**	Write and explain Kruskal's algorithm for minimum spanning tree with example.	**07**
	(b)	What is Principle of Optimality? Explain making change problem using dynamic method in detail with example.	**07**
		OR	
Q.3	**(a)**	Write and explain Prim's algorithm for minimum spanning tree with example.	**07**
	(b)	Explain job scheduling problem using greedy method with example.	**07**
Q.4	**(a)**	Describe an assembly line scheduling problem and give dynamic programming algorithm to solve it.	**07**
	(b)	Determine an Longest Common Subsequence of <A, B, C, B, A> and <A, B, A, B>	**07**
		OR	
Q.4	**(a)**	Write a short note on the P, NP, NPC and NP hard.	**07**
	(b)	Find an optimal parenthesization of a matrix chain product whose sequence of dimensions is <5, 10, 3 ,12, 4>	**07**
Q.5	**(a)**	Explain the use of Backtracking method for solving Eight Queens Problem giving its algorithm.	**07**
	(b)	Explain Rabin-Karp method for string matching with example.	**07**
		OR	
Q.5	**(a)**	Explain Knapsack problem using backtracking	**07**
	(b)	Explain Naive method for string matching with example.	**07**

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