Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V- EXAMINATION – SUMMER 2016

Subject Code: 150703 **Date: 09/05/2016**

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)**	Why do we use asymptotic notations in the study of algorithms? Briefly describe the commonly used asymptotic notations.	**07**
	(b)	What is Divide and Conquer Technique? Give the use of it for Binary Searching Method. Also give its Time Complexity.	**07**
Q.2	**(a)**	Explain in brief characteristics of greedy algorithms. Compare Greedy Method with Dynamic Programming Method.	**07**
	(b)	Explain bubble sort algorithm with suitable example.	**07**
		OR	
	(b)	Explain Prim's algorithm with example for construction of MST.	**07**
Q.3	**(a)**	Explain Kruskal's algorithm with example for construction of MST.	**07**
	(b)	Define an amortized analysis with any one of its techniques.	**07**
		OR	
Q.3	**(a)**	Explain quick sort algorithm with suitable example.	**07**
	(b)	Explain insertion sort algorithm with suitable example.	**07**
Q.4	**(a)**	Write a brief note on NP-completeness and the classes-P, NP and NPC.	**07**
	(b)	Explain the heap sort in detail. Give its complexity.	**07**
		OR	
Q.4	**(a)**	Explain Backtracking Method. What is N-Queens Problem? Give solution of 4-Queens Problem using Backtracking Method.	**07**
	(b)	Explain finite automata algorithm for string matching with suitable example.	**07**
Q.5	**(a)**	Explain Rabin-Karp method for string matching and also give the algorithm.	**07**
	(b)	Differentiate BFS and DFS.	**07**
		OR	
Q.5	**(a)**	Explain Selection Sort Algorithm and give its best case, worst case and average case complexity with suitable example.	**07**
	(b)	Explain Strasson's algorithm for matrix multiplication with suitable example.	**07**

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