Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER – I EXAMINATION – SUMMER 2017

Subject Code:2710201 **Date:09/05/2017**

Subject Name: Computer Algorithm

Time:02:30 p.m. to 05:00 p.m. **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)**	What is an algorithm? Explain various properties of an algorithm. (ii) Explain: Worst Case, Best Case & Average Case Complexity.	**07**
	(b)	Define: Directed Acyclic Graph, Principle of Optimality.	**07**
Q.2	**(a)**	Explain GCD recursion theorem with Euclid algorithm.	**07**
	(b)	Explain how to apply the divide and conquer strategy for sorting the elements using quick sort with example. Write algorithm for quick sort method.	**07**
		OR	
	(b)	Give the recursive algorithm to find Fibonacci sequence. Comment on the complexity of the algorithm.	**07**
Q.3	**(a)**	Give and Explain the Kruskal's Algorithm to find out Minimum Spanning Tree with illustration.	**07**
	(b)	Explain the use of Divide and Conquer Technique for Binary Search Method. Give the algorithm for Binary Search Method. What is the complexity of Binary Search Method?	**07**
		OR	
Q.3	**(a)**	What is Finite Automata? Explain use of finite automata for string matching with suitable example.	**07**
	(b)	Difference between Greedy and Dynamic programming. Explain making change problem using greedy and also prove why it is not giving best optimal solution?	**07**
Q.4	**(a)**	Explain the recursion tree method with example.	**07**
	(b)	Explain Dijkstra's shortest path algorithm with example.	**07**
		OR	
Q.4	**(a)**	Explain in Brief: NP Hard Problem, Polynomial reduction.	**07**
	(b)	Explain Floyd's Algorithm for shortest path along with example.	**07**
Q.5	**(a)**	What is an amortized analysis? Explain accounting method and aggregate analysis with suitable example.	**07**
	(b)	Write selection sort algorithm. And compute running time of algorithm.	**07**
		OR	
Q.5	**(a)**	What is NP completeness & the class P, NP? The TSP is NP complete? Justify.	**07**
	(b)	Explain Boyer Moore Pattern matching algorithm.	**07**

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