Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–I(New course)• EXAMINATION – WINTER- 2015

Subject Code: 2710201 **Date: 01/01/2016**

Subject Name: Computer Algorithm

Time:2:30 pm to 5:00 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)**	What is the use of Asymptotic notation? Explain type of notation with suitable example.	**07**
	(b)	Explain insertion sort and analyze the complexity of insertion sort algorithm in best case, worst case.	**07**
Q.2	**(a)**	Is selection sort greedy algorithm? If so, explain with greedy characteristics in detail.	**07**
	(b)	Explain master theorem and solve the following recurrence equation with master method 1. T(n)= 9T(n/3) + n 2. T(n)= 3T(n/4) + nlgn	**07**
		OR	
	(b)	Explain binary search algorithm and derive complexity of it. Also use master theorem to find complexity.	**07**
Q.3	**(a)**	What is an Amortized analysis? Explain aggregate analysis and potential method with suitable example.	**07**
	(b)	Define Minimum spanning tree. Explain Prim's algorithm in detail.	**07**
		OR	
Q.3	**(a)**	Solve the making change problem using Dynamic Programming method.(denominations : d1=1,d2=4,d3=6). Find solution for making change of Rs. 8	**07**
	(b)	Explain Huffman codes in detail.	**07**
Q.4	**(a)**	Explain Dijkstra shortest path algorithm with example. If we want to display intermediate node than what change we should make in algorithm.	**07**
	(b)	Explain Rabin-carp method for string matching and also give example.	**07**
		OR	
Q.4	**(a)**	Explain Boyer Moore pattern matching algorithm in detail.	**07**
	(b)	Explain in Brief 1. Polynomial Reduction 2. NP Hard Problem	**07**
Q.5	**(a)**	Explain Floyd algorithm with example	**07**
	(b)	Show how knapsack problem is np complete. Give Fully Polynomial-time approximation scheme for knapsack problem.	**07**
		OR	
Q.5	**(a)**	Explain Bellman Ford Single shortest path algorithm with suitable example.	**07**
	(b)	Give approximate algorithm for travelling salesman problem. Explain it with Example	**07**

****