

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014****Subject code: 2710201****Date: 13-01-2015****Subject Name: Computer Algorithm****Time: 02:30 pm - 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) Explain analysis of Insertion sort algorithm. **07**
(b) Explain Strassen's algorithm for matrix multiplication. **07**
- Q.2** (a) Explain Rabin Karp String matching algorithm. **07**
(b) Explain 0-1 knapsack problem. Solve $n=4$, $W=5$ and values of (weight, benefit) are (2, 3), (3,4), (4,5), (5,6). **07**
- OR**
- (b) Difference between Greedy and Dynamic programming. Explain making change problem using both techniques. **07**
- Q.3** (a) Explain performance ratios for approximation algorithm. **07**
(b) What is NP completeness & the class P, NP? The TSP is NP complete? Justify. **07**
- OR**
- Q.3** (a) Prove: "The clique problem is NP complete". **07**
(b) Explain the recursion tree method with example. **07**
- Q.4** (a) Explain Bellman-Ford Algorithm in reference to Single Source Shortest Path. **07**
(b) What is amortized analysis? Explain Aggregate analysis. **07**
- OR**
- Q.4** (a) Explain Dijkstra's Algorithm. **07**
(b) Explain potential method. **07**
- Q.5** (a) Explain asymptotic notations. **07**
(b) Explain Naïve String matching algorithm. **07**
- OR**
- Q.5** (a) Explain divide and conquer approach for Merge sort. **07**
(b) Explain GCD recursion theorem with Euclid algorithm. **07**
