

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE SEMESTER– 7th EXAMINATION – SUMMER 2015**

**Subject Code: 173205****Date:06/05/2015****Subject Name: Design & Analysis of Algorithm****Time: 02.30PM-05.00PM****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 Kruskal's algorithm to find minimum spanning tree with example. **07**  
(b) What is recurrence relation? Explain master theorem to solve the recurrence relation. **07**
- Q.2** (a) Explain insertion sort with example. Give its complexity. **07**  
(b) Explain fractional knapsack problem using greedy approach. **07**
- OR**
- (b) Explain making change problem using dynamic programming. **07**
- Q.3** (a) Explain Prim's algorithm to find minimum spanning tree with example. **07**  
(b) Explain P and NP problems with example. **07**
- OR**
- Q.3** (a) Explain Rabin-Karp string matching algorithm with example. **07**  
(b) Explain the concept of backtracking using knapsack problem. **07**
- Q.4** (a) Explain all asymptotic notations in details. **07**  
(b) What is an algorithm? Explain Best case, average case and worse case analysis. **07**
- OR**
- Q.4** (a) Find LCS for the following string:  $X = \langle A, B, B, D, C \rangle$  and  $Y = \langle B, B, C \rangle$ . **07**  
(b) Explain Merge sort with example. Derive its complexity. **07**
- Q.5** (a) Explain the concept of Backtracking. Demonstrate it with eight queens' problem. **07**  
(b) Explain naïve string matching algorithm. **07**
- OR**
- Q.5** (a) Explain Quick sort algorithm with example. Derive its complexity. **07**  
(b) Explain activity selection problem with example using greedy approach. **07**

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