

Code: CS6T5

III B.Tech - II Semester – Regular Examinations - May 2015

**DESIGN & ANALYSIS OF ALGORITHMS
(COMPUTER SCIENCE & ENGINEERING)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

- 1 a) What is Order of Growth? Define Worst case, Average case and Best case efficiencies. 7 M
- b) Give an algorithm to check whether all the elements in a list are unique or not and analyze the efficiency. 7 M
- 2 Explain Brute-Force string matching algorithm with an example? 14 M
- 3 Explain Strassen's Matrix Multiplication. 14 M
- 4 Explain Max-heap algorithm with an example. 14 M
- 5 Explain Prim's algorithm for finding minimum spanning tree. 14 M

- 6 Using algorithm OBST compute $w(i,j)$, $c(i,j)$ and $r(i,j)$, $0 \leq i \leq j \leq 4$ for the identifier set $(a_1, a_2, a_3, a_4) =$ (count, float, if, while) with $p(1) = 1/20$, $p(2) = 1/5$, $p(3) = 1/10$, $p(4) = 1/20$ and $q(0) = 1/5$, $q(1) = 1/10$, $q(2) = 1/5$, $q(3) = 1/20$, $q(4) = 1/20$. Using the $r(i,j)$ construct the optimal binary search tree. 14 M
- 7 a) Differentiate between NP-hard & NP-complete. 7 M
- b) How are Decision trees useful for sorting algorithms? Explain. 7 M
- 8 Suggest an approximation algorithm for travelling sales person problems using Minimum spanning tree algorithm. Assume that the cost function satisfies the triangle inequality. 14 M