

M.E. DEGREE EXAMINATIONS: DECEMBER 2009

First Semester

COMPUTER SCIENCE AND ENGINEERING

CSE501: Data Structures and Algorithms

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 2 = 20 Marks)

1. Define asymptotic notations.
2. What is NP – Hard problems?
3. Form a 12 element min – max heap.
4. Write the properties of Deap.
5. What is m-way search tree?
6. Define element node and branch node in a Trie.
7. What is Greedy Algorithm?
8. Define TVSP.
9. Define All Pair Shortest Path problem.
10. What is a multi stage graph?

PART B (5 x 16 = 80 Marks)

11. (a) (i) Explain Asymptotic notations and its properties.
[OR]
(b) (i) Define Recurrence Equations and explain how to solve recurrence equations.
12. (a) Write the program for min – max heap::Insert and also explain the insertion operation in a min – max heap.
[OR]
(b) (i) What is min leftist tree and show how 2 min leftist trees are combined? (10)
(ii) Write the steps for deleting an arbitrary node b from an F – heap. (6)
13. (a) Explain the rebalancing operation in AVL tree using LL, RR, RL and LR rotations.
[OR]
(b) (i) Explain the deletion operation in a 2 – 3 binary tree. (10)
(ii) Write short notes on Splay rotations. (6)

14. (a) (i) Describe Strassen's matrix multiplication. (8)
(ii) Explain the Greedy Algorithm for sequencing unit time jobs with deadlines and profits. (8)

[OR]

- (b) (i) Explain the algorithm for optimal storage of programs on computer tapes (8)
(ii) Describe the TVS Algorithm with neat illustrations. (8)

15. (a) Explain with an algorithm 0/1 knapsack problem using dynamic programming.

[OR]

- (b) Explain how back tracking is applied to solve 8-Queens problem with appropriate algorithms.
