

Code: R7211203

B.Tech II Year I Semester (R07) Supplementary Examinations December 2015

ADVANCED DATA STRUCTURES & ALGORITHMS

(Common to IT & CSS)

(For 2008 regular admitted batch only)

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Explain the object oriented design principles.
(b) Give a brief note on constructor and destructor.
- 2 List and explain the types of inheritance with example programs.
- 3 (a) Explain the time complexity and space complexity of binary search algorithm.
(b) Write a short note on O – notation, Omega notation and Theta notation.
- 4 Write a program to compute the number of collisions required in a long random sequence of insertion using linear probing, quadratic probing and double hashing.
- 5 (a) With the help of a suitable example, explain the external sorting.
(b) Sort the following set of elements by using Min Heap Priority sorting technique: {50, 60, 30, 10, 40, 20}.
- 6 (a) What are the minimum and maximum numbers of leaves in a balanced tree of height h?
(b) Explain insertion operation on B-trees with suitable example. Also mention its applications.
- 7 (a) Describe the Strassen's matrix multiplication.
(b) Show that if unions are performed by height, then the depth of any tree is $O(\log N)$.
- 8 (a) What is the best method to solve single source shortest path problem (greedy method or dynamic programming)? Justify your answer with example.
(b) Show the step by step procedure of deriving the minimum cost spanning tree using Prim's algorithm for the graph given below.


