JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year I Semester Examinations, November/December-2013
Data Structures through C++
(Common to CSE, IT)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
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1.a) Discuss with examples the different ways of passing objects as parameters in C++.
 b) What is a copy constructor and when is it called?   [10+5]

2.a) Write a C++ Program that illustrates how run time polymorphism is achieved.
 b) Write a C++ Program for copying the contents of a given source file to a destination file. The source file name and the destination file name are passed as command line arguments.   [8+7]

3.a) Define time complexity. Discuss the asymptotic notation used in algorithm analysis.
 b) Write a non recursive function in C++ for the preorder traversal of a given binary tree.   [7+8]

4.a) What is the purpose of a Hash function in Hashing? Discuss any two hash functions with examples.
 b) Discuss with an example how the chaining method is used for resolving collisions in Hashing.   [8+7]

5. Write a template based C++ Program for sorting an array of elements in ascending order using Heap sort.   [15]

6.a) Write a C++ function for searching for an integer key element in a given Binary search tree of integer elements.
 b) Define an AVL tree. Give an example for an AVL tree.   [8+7]

7.a) Define a B-tree of order m.
 b) Write an algorithm for performing the depth first search of a given graph. Discuss its time complexity.   [7+8]

8.a) Write a C++ Program for implementing the Knuth-Morris-Pratt Pattern matching algorithm.
 b) What is a trie? Give an example for a trie.   [8+7]

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