

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

B.Tech II Year I Semester Examinations, May/June-2013

Data Structures through C++

(Common to CSE, IT)

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

- 1.a) Distinguish between an object and a class.
- b) Explain with an example C++ Program how the new and delete operators are used for dynamic memory allocation and de allocation respectively. [15]

- 2.a) Write a C++ Program for displaying the contents of a given text file.
- b) Write a C++ Program that illustrates how run time polymorphism is achieved. [15]

- 3.a) Write a template function in C++ for inserting an element into a queue. Queue is represented using an array.
- b) Write a non recursive procedure for the preorder traversal of a given binary tree. [15]

- 4.a) Give the abstract data type specification of a dictionary.
- b) Discuss with examples how the following methods are used for resolving collisions in Hashing:
 - i) Linear Probing
 - ii) Chaining. [15]

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

6. Write an algorithm for deleting an integer element from a given Binary search tree of integer elements. Discuss its time complexity. [15]

- 7.a) Explain any two operations of B-trees with C++ code.
- b) Write an algorithm for the breadth first search of a given graph. Discuss its time complexity. [15]

8. Write a C++ Program that implements Knuth-Morris-Pratt Pattern matching algorithm to determine the index of the String S1 of length m in the String S2 of length n, where $m < n$. [15]

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