

Jawaharlal Nehru Technological University

M.C.A MCA-I Semester Supplementary Examinations

DATA STRUCTURES Question paper

Code No: NR-13/MCA

Time: 3 hours Max

July/Aug 2008.

Marks: 60

Answer any FIVE questions All questions carry equal marks:

1. a) What are the characteristics of array. Give the C syntax for 1-dimensional and 2-dimensional array declarations.
b) Write a program to add even and odd numbers from 1 to 10. Store them in two separate arrays and display them.
2. a) Write a C program to insert a record at
 - i) the beginning
 - ii) the end and
 - iii) the given position, in a single linked list.b) Write a C program to add two polynomials with two variables and nth degree.
3. a) Write a C program to implement a stack data structure with all operations.
b) Simulate how the stack modifies in the implementation of factorial.
4. a) Write a C program to perform insert and delete operations with a circular queue and display the elements.
b) What are the characteristics of priority queue. Declare the data structure used for priority queue.
5. a) Write a C program to implement merge sort algorithm.
b) How to extend simple merge sort algorithm to sort the elements of an unsorted input array?
6. a) Write a C program for binary search and analyze the time complexity.
b) Classify the hashing techniques. Give a brief note about the characteristics of each.
7. a) How to construct a unique binary tree if preorder and in order traversals of the tree are given as input.
b) If the binary search tree is constructed for the input records which are in sorted order, Comment about the nature of output binary search. Suggest a solution.
8. a) Construct a heap tree for the following input data
15, 9, 23, 14, 27, 29, 28, 20.
b) Explain with example, how the threads are introduced in a binary tree to avoid recursion. How to find in order successor of any node using threaded binary tree.