

MCA DEGREE II SEMESTER EXAMINATION MAY 2014**CAS 2202 DATA STRUCTURES USING 'C'**
(Regular/Supplementary)

Time: 3 Hours

Maximum Marks: 50

PART A
(Answer *ALL* questions)

(15 x 2 = 30)

- I. (a) Explain the concept of Stack with an example.
(b) Explain the implementation of sparse matrix using linked list.
(c) Differentiate between Array and Linked List.
- II. (a) Differentiate between B- tree and B+ tree
(b) What is a Red Black tree? Give an example.
(c) What are the advantages of Threaded Binary tree?
- III. (a) What are the characteristics of a good hash function?
(b) Differentiate between binomial heap and fibonacci heap.
(c) Explain how priority queue is implemented using the Heap.
- IV. (a) What is Backtracking? What are its applications?
(b) Differentiate between recursion and recursive backtracking.
(c) Write a recursive 'C' program to find the factorial of any number.
- V. (a) What is the difference between external sorting and internal sorting?
(b) Explain quick sort with example.
(c) What is the use of radix sort?

PART B

(5 x 4 = 20)

- VI. Write a 'C' program for polynomial addition using linked list implementation
OR
- VII. Write a 'C' program to simulate the working of a circular queue using linked list implementation.
- VIII. Explain the construction of binary search tree with an example.
OR
- IX. Write a 'C' program to implement insert, delete operations and in order traversal of a threaded binary tree.
- X. When does collision occur in hashing? What are the various collision resolution techniques?
OR
- XI. Describe the implementation of operations on a binomial heap.
- XII. Explain the efficiency of recursion. Write a recursive C program to solve Tower of Hanoi problem.
OR
- XIII. Write a recursive 'C' function for performing binary search.
- XIV. Write an algorithm to sort N numbers using merge sort technique.
OR
- XV. Develop an algorithm using a heap of K elements to find the largest K numbers in a large unsorted file of N numbers.