

**END-TERM EXAMINATION
SECOND SEMESTER [MCA] – MAY 2005
DATA STRUCTURE**

Paper Code: MCA-102

**Time: 3 Hours
Marks: 60**

- Q. 1 (a) Define B-Tree
(b) Convert following infix expression into prefix and postfix
 $A * (B + C) * D / E$.
(c) Give the difference between external and internal sorting. Give names of some external sorting techniques.
(d) Define stack and give some applications of stacks.
(e) How many nodes are there on level I of a binary tree? Prove the answer.
(f) Define transitive closure of a graph.
(g) Define inverted files.
(h) Describe adjacency list representation of graph with the help of an example.
(i) Give two examples of Hash function.
(j) Give difference between complete and full binary tree.

UNIT - I

Q. 2 How polynomials are represented using linked list. Write program for addition of two polynomials represented using linked list.

Q. 3 Explain with the help of algorithm how infix expression converted to postfix expression using stack.

UNIT - II

Q. 4 Write Prim's algorithm for finding minimum cost spanning tree. Show its working on a graph.

Q. 5 Explain how trees can be used for representation of disjoint sets. Explain Union and find operations on these sets.

UNIT - III

Q. 6 Explain Merge sort algorithm and show its working on following members
4, 10, 2, 6, 8, 12, 5, 7

Q. 7 What is hashing? What are various types of Hash functions? What are various methods of collision resolution?

UNIT - IV

Q. 8 What do you mean by file organization? Explain various file organization techniques.

Q. 9 Write short notes on any two of the following Index techniques –

(d) Cylinder surface indexing

(e) Hashed Indexes

(f) Tree indexing.

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