

MCA/M07
Data Structure Using 'C'
MCA -201

Time : 3 Hours

MM:50

Note:- Attempt Five questions in all, selecting One question from each unit.

UNIT-I

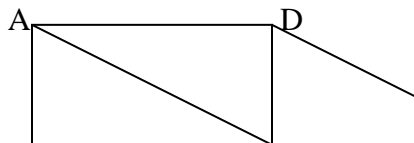
- 1(a) Explain three types of structures for storing strings in memory. 4
- (b) Write second pattern matching algorithm and apply the algorithm to the pattern P=abc and the text T=aabbabc. 6
- 2(a) Write a program for binary search to illustrate the use of linear array in C. 4
- (b) Write algorithm for linear search and compare its complexity with the complexity for binary search. 6
- 3(a) Write algorithm for multiplication of two matrices and explain the algorithm with suitable example. 6
- (b) Write an example of sparse matrix and explain its representation in memory. 4

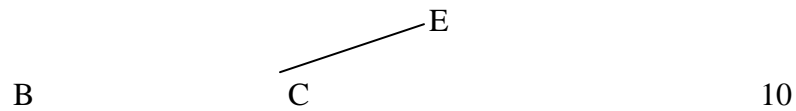
UNIT-II

- 4 Describe method and write corresponding algorithm for evaluation of an arithmetic expression written in infix notation. Apply the algorithm to evaluate the following expression. 10
- 5 Define the structure queue and write algorithms for insertion and deletion operation on queue. Explain implementation of algorithms for the insertion of characters K,A,C,S,R,L and then deletion of two elements. 10
- 6(a) Write algorithms for insertion of a given ITEM of information into a sorted linked list. Explain the operation with suitable example. 6
- (b) Write the C syntax for creation of a node of linked list. 4
- 7(a) Write algorithm to insert an element into a binary search tree and explain it with suitable example. 5
- (b) Write algorithm for in order traversal of a binary tree and apply the algorithm to a binary search tree.

UNIT-III

- 8 Write suitable algorithms to delete a node from a graph G and explain implementation of algorithms to the following digraph for the node D.





- 9(a) Write algorithm to insert a node into a graph G and explain the algorithm with suitable example. 5
- (b) Write algorithm for depth-first search and apply the algorithm to find path from A to D in the following graph.



- 10(a) Describe different hashing techniques, and explain purpose of hashing and hashing techniques. 5
- (b) Write algorithm for selection sort and derive its complexity. Explain the algorithm and its complexity for the following list of numbers:

42,52,2,32,66,77,20,88 5