MCA/M06
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) Consider the pattern $P=(ab)^3$. Construct the table and the corresponding labeled directed graph used in second pattern matching algorithm.

(b) Write down the algorithm for first pattern matching. If the pattern P is an r-character string and the text T is an s-character string then find the best case complexity and worst case complexity when the first pattern matching algorithm applied to P and T. 3+7

2(a) Give an example of 5*5 lower triangular matrix. Explain representation of an n*n lower triangular matrix in memory.

(b) Describe different ways of organizing data of employees of different departments of a company. 5+5

3(a) Explain with suitable examples fined length storage structure and variable length storage with fixed maximum structure for storing strings respectively.

(b) Write algorithm for addition of two tridiagenal matrices. 5+5

UNIT-II

4(a) Distinguish between array and stack. Explain linked representation of stack. Explain linked representation of stack.

(b) Write an algorithm to convert infix expression into post fix expression and write its corresponding syntax in C. 4+6

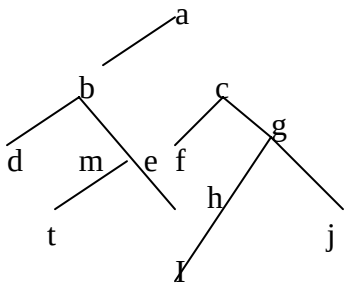
5(a) Explain queue and dequeue with suitable examples respectively and explain representation of priority queue in memory.

(b) Explain recursion with suitable example. 6+4

6(a) Suppose List is a header (Circular) linked list in memory.
Write an algorithm which deletes the last node form list. Explain the algorithm with suitable example.

(b) Write an algorithm to delete a node with a given item of information from a linked list. Explain the algorithm with an example. 5+5

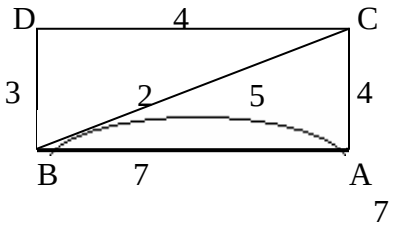
7(a) Write an algorithm for post order traversal of binary tree and apply the algorithm.



(b) Write algorithm to delete the root of leap. 6+4

UNIT-III

8(a) Write shortest-path algorithm to find a matrix Q such that Q[J,K] is the length of the shortest path from the node V_j Q[J,K] is the length of the shortest path from the node V_j to node V and apply the algorithm to the following diagraph where the edges are labeled with weights. Also show the map of paths which corresponds.



(b) Write algorithm to find location of an edge(A,B) in the graph G. 7+3

9(a) Write algorithm for Insertion sort and apply the algorithm to the list of number 3,55,88,22,11,15,44,66

(b) Write short note on Hashing. 5+5

10(a) Write short note on dynamic memory management

(b) Write algorithm to find indegree and outdegree of each node in graph G. 6+4