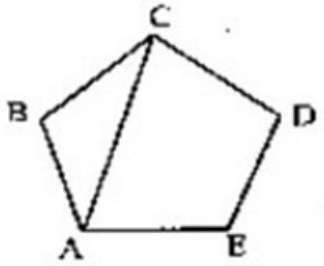
(b) Write algorithm to delete a node from binary search tree. 7

Unit–IV

8. Write algorithm to delete a node from a graph G. Implement the algorithm to delete the node B from the following graph : 14



9. (a) Write algorithm to find in-degree and out-degree of each node in a directed graph G. 7

(b) Using Radix Sort technique sort following numbers :

659, 328, 106, 99, 215, 76, 505, 67. 7

Roll No. .....

10201

Printed Pages : 4

MCA / M12

DATA STRUCTURES USING C

Paper–MCA–201

Time allowed : 3 hours] *[Maximum marks : 80*

Note : Attempt Q. No. **1** *and one question from each of* **Units–I, II, III** *and* **IV**.

1. (i) Write an example of record in C language and explain its memory representation.

(ii) Explain memory representation of an n × n tridiagonal matrix.

(iii) Write algorithm to insert an element into and delete an element from stack.

(iv) Write the C syntax for memory allocation of a node of linked list.

(v) Draw a complete tree with nodes from one to ten and explain its memory representation.

(vi) Construct AVL search tree with following numbers :

77, 35, 45, 25, 66, 22, 88.

(vii) Explain linked representation of the graph hexagon.

(viii) Write algorithm to search a node in the graph G. 8×3

Unit–I

2. (a) Write a program in C to insert element at the kth position in the linear array. 6

(b) Write algorithm for Insertion sort and describe its complexity. 8

3. (a) Write algorithm to find a pattern P in the text T and describe its complexity 7

(b) Explain different structures for storing strings in memory. 7

Unit–II

4. (a) Write algorithms to convert an Infix expression into postfix expression and evaluation of postfix expression. 8

(b) Write a program in C to insert an element into and delete an element from queue. 6

5. (a) Write algorithm to insert an element into a sorted linked list and explain it with suitable example. 8

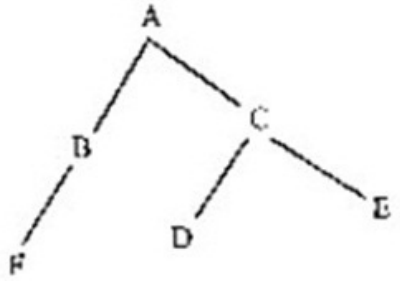
(b) Write algorithm to delete an element from a two-way linked list. 6

Unit–III

6. Write algorithm for Heap sort and explain it for following numbers.

58, 28, 12, 33, 22, 42, 50. 14

7. (a) Write algorithm for pre-order traversal of a binary tree and implement the algorithm to the following tree :



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