Seat No.....

Progressive Education Society's

Modern College of Arts, Science and Commerce (Autonomous)

Shivajinagar, Pune -5

[Total no. of questions: 04] [Total number of pages: 02]

First Year BBA (C.A.) (Mar-2020)

End Semester Examination, (2019 Pattern) Semester – II

Course Code: 19BaBbcU201 **Course Name: Data Structure Using C Language**

Date: 16.03.2020 **Time: 10.00 a.m.-12.00 p.m.**

[Time: 2 Hours] [Max Marks: 60]

N.B.:— (i) All questions are compulsory.

(ii) Draw figure/ diagram if necessary.

(iii) Assume suitable data if necessary.

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1. Answer the following (Any six): **[6×2=12]**

a) Define Data Structure.

b) "When Linear Search Method will more efficient." Comment.

c) Explain Singly Circular Linked List.

d) What is Circular Queue? How it is represented.

e) What is Graph? State its types.

f) What is pointer to pointer?

2. Attempt any four of the following: **[4×4=16]**

a) Explain BFS traversing technique with an example.

b) Explain the difference between Binary Tree and Heap.

c) Explain Dynamic Representation of Stack with example.

d) Write an algorithm for quick sort. (Use recursion)

e) What are the advantages of an Array over a Linked List?

f) Explain different types of Dynamic Memory Allocation Functions.

3. Attempt any four of the following: **[4×4=16]**

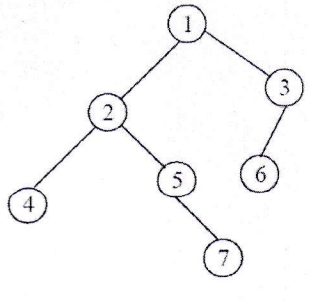
a) Write an algorithm for inserting a node at given position in doubly link list.

b) What is Recursion? Explain with example.

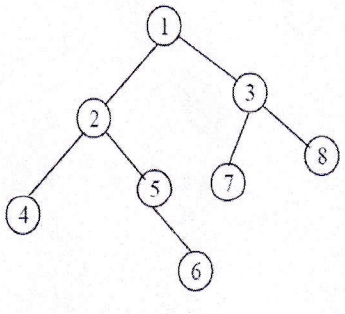
c) Sort the following data by using bubble sorts techniques :
56, 23, 98, 67, 3, 87, 45, 77, 99

d) Give the Preorder, Inorder and Postorder Traversal of the following trees :

(i)



(ii)



e) Explain Prim's algorithm for minimal spanning tree with example.

f) Convert the following infix to prefix expression :

i) A + B * C/D

(ii) A + B + C + D

4. Attempt any four of the following: **[4×4=16]**

a) Write a function to count the number of leaf and non-leaf nodes in a tree (Recursive functions).

b) Write a function to merge given two singly linked lists

c) Write a function to calculate Indegree and Outdegree of each Node in the Graph.

d) Write a 'C' program for Implementation of Circular Queue.

e) Write a 'C' program for Binary Search Method.

f) Write a 'C' program for evaluation of a given polynomial. (e.g. 2x3 + x + 3).

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