Progressive Education Society's

Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16, NEP2020 (Autonomous)

End Semester Examination: OCT / NOV 2024

***Total No. of Questions**: 5/31* ***Total No. of Pages**:*

SECOND YEAR (BCA Science)
BCA23101: Data Structure
(Semester III)

Program: BCA(BCASc 08)) **Credits:** 4
Program Specific: BCA (Science) **Time:** 3 Hours
Course Type: CC **Max. Marks:** 60
Paper: **SET: A**

Instructions to the candidate:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Draw a well labeled diagram wherever necessary.*

SECTION: A

Q1) Answer the following: **[1 X 10 =10]**

1. What is Data Structure?
2. Define Data Type.
3. What do you mean by preorder?
4. State the meaning of Data Object.
5. Which notation is use to denote lower bound?
6. Define An Array.
7. What is best case time complexity of merge sort?
8. Define Algorithm.
9. Draw the node structure of singly linked list.
10. Give the example of strictly binary tree.

SECTION: B

Q2) Answer any five of the following **[5 X 2 = 10]**

1. Explain the max heap data structure.
2. What do you mean by enqueue and dequeue?
3. State various Operations of stack.
4. Write the applications of binary and linear search?
5. What are binary Trees?
6. Differentiate Null and void.
7. State the difference between Physical and logical data structure.

SECTION: C

Q3) Answer any five of the following **[5 X 3 = 15]**

1. Define Graph and explain its types.
2. What are the operations an array?
3. Give the bubble sort method with an example.
4. Write an algorithm for binary search.
5. Give the different ways of representing two dimensional array in memory.
6. What are various functions of hash table?
7. Create binary search tree for the following data:
   23,4,67,2,78

P.T.O.

SECTION: D

Q4) Answer any three of the following **[3 X 5 = 15]**

1. Compare Singly and doubly link list.
2. Write node structure for binary search tree.
3. Write an algorithm for inserting element in circular queue.
4. Explain how a link list can be implemented using array?
5. Compare static and dynamic implementation of list.

SECTION: E

Q5) Answer any two of the following **[2 X 5 = 10]**

1. Solve the following data using bubble sort
   3,4,7,0,1
2. What is time complexity?
3. Write a C code to find length of a linked list and also calculate sum and average of its elements.
4. Write a C code for counting leaf nodes of a tree.

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