BACHELOR OF SCIENCE (COMPUTER SCIENCE) (CBCS - 2018 COURSE)
S.Y.B.Sc.(Computer Science) Sem-IV : WINTER- 2022
SUBJECT : DATA STRUCTURES USING C++

Day : Tuesday | Time : 02:00 PM-05:00 PM

Date : 6/12/2022 | **W-20103-2022** | Max. Marks : 60

N.B :

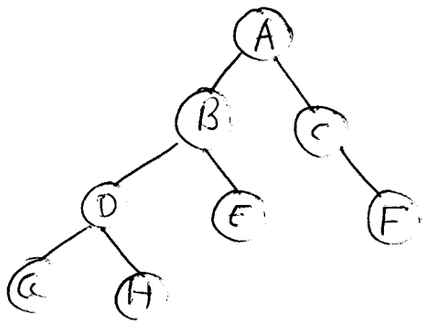
1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.

Q.1 Attempt **ANY TWO** of the following: **(12)**

a) Define Graph as an ADT.
b) What is meant by Threaded binary tree? Give example.
c) Write a C++ program to implement linear search algorithm.

Q.2 Attempt **ANY TWO** of the following: **(12)**

a) Write a C++ program to implement linear queue using array.
b) Consider the given tree T find inorder pre-order and post-order traversal.



c) What is Array? Describe features of Array.

Q.3 Attempt **ANY TWO** of the following: **(12)**

a) Write a C++ program to implement Doubly linked list.
b) Explain the concept of AVL tree with suitable example.
c) Elaborate Depth first search algorithm with the help of suitable example.

Q.4 Attempt **ANY THREE** of the following: **(12)**

a) What is Parse tree? Give example.
b) Write C++ functions for push ( ) and pop ( ).
c) Sort the given data using insertion sort technique.
20 40 35 38 19 22 37
d) What is Adjacency Matrix? Also explain Adjacency Multilist.

Q.5 Attempt **ANY FOUR** of the following: **(12)**

a) What is malloc ( ), calloc ( )?
b) Consider given the infix convert it to prefix and postfix $\Rightarrow$ a+b*c-d/e
c) Define data type, data structure.
d) What is deque? Give example.
e) Differentiate between static and dynamic memory allocation methods.
f) Write a C++ program using array to find inverse of a matrix.

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