SEAT No._____

[48]

SARDAR PATEL UNIVERSITY
On Demand (NC)
Examination June-2022
B.C.A. – Semester (III)
Subject Code: US03CBCA03
Subject Title: Advanced Data and File Structures
Thursday, 16-06-2022

Time: 12:00 P.M. To 02:00 P.M.   **Max. Marks – 70**

Q.1   Give Answers of Following Multiple Choice Questions.   **[10]**

I. An array is a _____ data structure.
    (A) Unordered   (B) Non-Composite
    (C) Linear   (D) None of these

II. The number of elements in an array is called the _____ of the array.
    (A) Size   (B) Base
    (C) Type   (D) None of these

III. Leaf node is known as _____ node.
    (A) Root   (B) Parent
    (C) Terminal   (D) None of these

IV. A binary tree has at most _____ child.
    (A) Zero   (B) One
    (C) Two   (D) None of these

V. A digraph is known as _____ graph.
    (A) Directed Graph   (B) Multiple Graph
    (C) Double Graph   (D) None of these

VI. A directed edge is known as _____
    (A) Segment   (B) Arc
    (C) Line graph   (D) None of these

VII. There are at most _____ passes required to perform bubble sort.
    (A) n+1   (B) n
    (C) n-1   (D) n/2

VIII. K-way merging is known as _____
    (A) Simple Merge   (B) Multiple merging
    (C) Selection sort   (D) None of these

IX. Record is also known as group or _____
    (A) Item   (B) Segment
    (C) Entity   (D) None of these

X. _____ File is also known as Random file.
    (A) Serial   (B) Sequential
    (C) Direct   (D) None of these

Q.2   **Fill in The Blanks And True-False.**   **[08]**

   I.   _____ is a value or variable which is used to refer the element of an array.

   II.   If a graph does not have any cycle then it is called _____ Graph.

   III.   The process of finding the data from its data structure is called _____

   IV.   CDC stands for _____

   V.   Forest is a set of disjoint trees. **[True/False]**

   VI.   A node whose indegree is 0 is called Source node.**[True/False]**

   VII.   Sequential search technique requires an ordered table to search a particular record in the table. **[True/False]**

   VIII.   The collection of files is known as Record. **[True/False]**

Q.3   **Answer the Following Short Questions. (Attempt Any Ten)**   **[20]**

   I.   What is the upper bound and lower bound of an array?

   II.   List out any two applications of an array.

   III.   Define Node and Branch.

   IV.   What is Binary Tree?

   V.   List the types of binary tree traversal.

   VI.   What is mixed Graph?

   VII.   List the applications of sorting.

   VIII.   List the applications of Searching.

   IX.   Define sorting. Also list the sorting techniques.

   X.   Define Key and Sequence Key.

   XI.   Define File organization and list out different types of file organization.

   XII.   What is buffer? Why buffers are used in sequential file organization?

Q.4   **Answer the Following Long Questions. [Attempt Any Four]**   **[32]**

   I.   Define array. Explain 1-D array with declaration and initialization.

   II.   Define tree with an example and Explain applications of tree.

   III.   What are the types of traversal of Binary tree? Explain any two with an example.

   IV.   Draw a binary tree for the expression A*B–(C+D)*(P/Q).

   V.   Write down the algorithm of Merge sort.

   VI.   What is searching? List and explain searching techniques with algorithms.

   VII.   Explain in detail the structure of Sequential File.

   VIII.   Explain the structure of index sequential file supported by IBM.

*******X*******

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