

[12]

**SARDAR PATEL UNIVERSITY**  
**External Examination**  
**B.C.A. III Semester (NC) September-2022**  
**US03CBCA03: Advanced Data and File Structures**  
**Saturday, 24/09/2022**



Time: 12:30 P.M. to 02:30 P.M.

Max. Marks – 70

**Q.1 Multiple Choice Questions.**

[10]

- i. The number of elements in an array is called the \_\_\_\_\_ of the array.  
(A) Size (B) Base  
(C) Type (D) None of these
- ii. An array is a \_\_\_\_\_ data structure.  
(A) Unordered (B) Non-composite  
(C) Linear (D) None of these
- iii. The node which is at the end and which does not have any child is called \_\_\_\_\_.  
(A) Branch (B) Leaf  
(C) Parent (D) None of these
- iv. Minimum number of nodes possible in a binary tree of height h is \_\_\_\_\_.  
(A) h (B) h-1  
(C)  $2^h$  (D) h+1
- v. A directed edge is known as \_\_\_\_\_.  
(A) Segment (B) Double edge  
(C) Arc (D) Arrow
- vi. The number of edges connected with vertex  $V_i$  is called the \_\_\_\_\_ of vertex  $V_i$ .  
(A) Isolated (B) Path  
(C) Length (D) Degree
- vii. The best case performance of the bubble sort is \_\_\_\_\_ comparisons.  
(A) n+1 (B) n  
(C) n-1 (D) n/2
- viii. The process of finding the data from its data structure is called \_\_\_\_\_.  
(A) Searching (B) Sorting  
(C) Deletion (D) None of these
- ix. A record item that uniquely identifies a record in a file is called a \_\_\_\_\_.  
(A) Key (B) Sequence Key  
(C) Item (D) None of these
- x. All types of external storage device support a \_\_\_\_\_ file organization.  
(A) Direct (B) Index Sequential  
(C) Sequential (D) None of these

P.T.O.

Q-2

**Fill In The Blanks And True/False.**

[08]

- 1) All elements of an array are stored in \_\_\_\_\_ fashion.
- 2) A node whose indegree is 0 is called \_\_\_\_\_
- 3) \_\_\_\_\_ technique requires an ordered table to search a particular record in the table.
- 4) IBM stands for \_\_\_\_\_
- 5) Index is also known as Subscript. [True/False]
- 6) Graph contains maximum possible number of nodes in all level. [True/False]
- 7) Searching is the operation of arranging the records of a table into some sequential order according to an ordering criterion. [True/False]
- 8) The collection of files is known as Database. [True/False]

Q.3

**Short Questions. (Attempt Any Ten Questions)**

[20]

- 1) What is an array?
- 2) List out applications of an array.
- 3) Define tree with an example.
- 4) What do you mean by Graph?
- 5) What is loop and cycle of a Graph?
- 6) What are the types for representing Binary tree?
- 7) Define sorting. Also list the sorting techniques.
- 8) Define Sequential Search.
- 9) List the applications of Searching.
- 10) Define Bucket Capacity.
- 11) What is File organization? List out different types of file organization.
- 12) Define File and Database.

Q.4

**Long Questions. (Attempt Any Four Questions)**

[32]

- 1) Explain the representation of 1-D array in the memory.
- 2) Explain 2-D array with declaration and initialization.
- 3) What are the types of traversal of Binary tree? Explain any two with an example.
- 4) What is Binary tree? Draw a binary tree for the expression  $A*B-(C+D)*(P/Q)$ .
- 5) Write down the algorithm of Merge sort.
- 6) What is searching? List and explain searching techniques with algorithms.
- 7) Explain in detail the structure of Sequential File.
- 8) Write a detail note on structure of Direct files.

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