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Seat No: \_\_\_\_\_

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**SARDAR PATEL UNIVERSITY**

**B.C.A.(3<sup>rd</sup> SEM) – EXAMINATION NOVEMBER-2022**

**US03BCA25 : DATA STRUCTURES - I**

**Date: 12-11-2022(SATURDAY)**

**Time:02:00 PM to 05:00 PM**

**NOTE: Right hand figure indicates the marks of each question.**

**Marks: [70]**

**Q. 1 Multiple Choice Questions (One marks each)**

**[10]**

- 1 An array is a \_\_\_\_\_ data structure.  
(A) Unordered (B) Linear  
(C) Non-composite (D) Heterogeneous
- 2 \_\_\_\_\_ of the array represents the kind of data type.  
(A) Size (B) Base  
(C) Type (D) Index
- 3 Index is also known as \_\_\_\_\_.  
(A) Subscript (B) Non-subscript  
(C) Base (D) Type
- 4 An operation that is used to insert an element on a stack is known as \_\_\_\_\_.  
(A) Push (B) Pop  
(C) Peep (D) Change
- 5 In the \_\_\_\_\_ notation the operators are written after the operands.  
(A) prefix (B) postfix  
(C) infix (D) None of above
- 6 Postfix notation is also known as \_\_\_\_\_.  
(A) Suffix notation (B) Reverse polish  
(C) Polish notation (D) Both A & B
- 7 A Queue is logically a \_\_\_\_\_ type of list.  
(A) First-in First-out (B) First-in Last-out  
(C) Last-in First-out (D) Last-in Last-out
- 8 The line formed for paying fees for college is an example of \_\_\_\_\_.  
(A) Stack (B) Simple Queue  
(C) Circular Queue (D) Priority Queue
- 9 The collection of files is known as \_\_\_\_\_.  
(A) Data file (B) Database  
(C) File (D) None of these
- 10 A directed edge is known as \_\_\_\_\_.  
(A) Segment (B) Arc  
(C) Double edge (D) Arrow

P.T.O.

**Q. 2 Short Questions. (Attempt any ten)**

**[20]**

- 1 Define Data Structure.
- 2 List out application of Data Structure.
- 3 Define Array with suitable example.
- 4 List types of notation.
- 5 List operations carried out on a Stack. Define any one of them.
- 6 Explain infix notation.
- 7 Write a note on Circular Queues.
- 8 State the limitations of Simple Queue.
- 9 Define queue. List the types of Queues.
- 10 Explain Serial processing in brief.
- 11 What do you mean by file organization? Why it is Required?
- 12 Define: (i) Record, (ii) File

**Q. 3 A] List out operations used on Data Structure. Explain any three.**

**[06]**

**B] Explain address calculation of 1-D array element with example.**

**[04]**

**OR**

**Q. 3 A] Define array. Explain 1-D array with declaration and initialization.**

**[06]**

**B] Explain applications of an array.**

**[04]**

**Q. 4 A] Write an algorithm to insert an element into a Stack.**

**[05]**

**B] Explain Infix to Postfix conversion.**

**[05]**

**OR**

**Q. 4 A] Define stack. And also explain notations in detail.**

**[05]**

**B] Explain recursion in detail with example.**

**[05]**

**Q. 5 A] Explain the Circular Queues with an example.**

**[05]**

**B] Write an algorithm to delete an element in a Simple queue.**

**[05]**

**OR**

**Q. 5 A] Write an algorithm to Insert an element in a Simple queue.**

**[05]**

**B] Explain the Simple Queues with an example. Also explain the limitations of Simple Queues.**

**[05]**

**Q. 6 A] Explain in detail the structure of Sequential File.**

**[05]**

**B] Define: (1) Database, (2) Key, (3) Complete Graph, (4) Cycle, (5) Sink node**

**[05]**

**OR**

**Q. 6 A] Write a short note on Multiple buffering.**

**[05]**

**B] Define: (1) Item, (2) Graph, (3) Self-loop, (4) Multigraph, (5) Simple graph**

**[05]**

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