[50] Seat No: _____ No. of Printed Pages: 02

5

SARDAR PATEL UNIVERSITY

B.C.A. (3rd SEM) – EXAMINATION – JUNE – 2022

US03CBCA25: DATA STRUCTURES - I

Date: 15-06-2022, Wednesday Time: 12:00 PM to 02:00 PM

NOTE: Right hand figure indicates the marks of each question. Marks: 70

Q. 1 Multiple Choice Questions (One marks each) **[10]**

1 _____ are the building blocks of program.

(A) Information (B) Data (C) Data Structure (D)Data types

2 An array is a _____ data structure.

(A) Unordered (B) Non- Composite (C) Linear (D) Heterogeneous

3 Index is also known as _____.

(A) Subscript (B) Non-subscript (C) Base (D) Type

4 The term "push" and "pop" is related to _____.

(A) Array (B) Stack (C) Queue (D) All of these

5 In the _____ notation the operators are written after the operands.

(A) prefix (B) postfix (C) infix (D) None of above

6 An operation that is used to insert an element on a stack is known as _____.

(A) Push (B) Pop (C) Peep (D) Change

7 A queue is a _____ data structure.

(A) Non-Primitive (B) Linear (C) Homogeneous (D) All of these

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 Record is also known as group or _____.

(A) Item (B) Segment (C) Entity (D) None of these

10 The collection of files is known as _____.

(A) Data file (B) File (C) Database (D) None of these

Q. 2 Fill in the blanks and True / False. (One marks each) **[08]**

1 An array is a Composite data structure. (True / False)

2 The number of elements in an array is called the _____ of the array.

3 A stack is Linear type of data structure. (True / False)

4 Prefix notation is also called _____.

5 For a simple queue, if the queue is empty then Front and Rear will be 0. (True / False)

6 A queue is logically a _____type of list.

7 A node whose indegree is 0 is called Source node. (True / False)

8 A diagraph is known as _____ graph.

(P.T.O.)

Q. 3 Short answer questions (Attempt any 10 out of 12) [20]

1 What is Linear Data Structure? List out linear Data Structure.

2 Draw the diagram of classification of Data structure.

3 Differentiate Primitive Data Structure and Non-Primitive Data Structure

4 List types of notation.

5 What is Peep and Change operations of a stack?

6 Explain in brief array representation of a stack.

7 State the applications of Queue.

8 What are Ascending Priority Queues? Explain.

9 State the limitations of Simple Queue.

10 Define the terms: 1) Record, 2) Key

11 What do you mean by File Organization? Why it is required?

12 Define Complete graph, Weighted graph.

Q. 4 Long answer questions (Attempt any 4 out of 8) [32]

1 List out operations used on Data Structure. Explain any four.

2 Define Array. Explain 1-D array with declaration and initialization with example.

3 Give postfix form for

   1. (A + B) * C / D + E ^ F / G
   2. A + [(B + C) + (D + E) * F] / G

4 Write an algorithm for Push and Pop operation of a stack.

5 Write an algorithm to Insert and Delete an element in a Simple queue.

6 Explain the Circular queues with an example.

7 Explain in detail the structure of Sequential File.

8 Explain Multilist in detail.

X