

**BCA 3rd Semester (Honours) Examination, 2021**

**BACHELOR OF COMPUTER APPLICATION**

**Course ID: 33313**

**Course Code: BCA-CC-07**

**Course Title: DATA STRUCTURE THROUGH C++**

**Time: 2 Hours**

**Full Marks:50**

*The figures in the margin indicate full marks.  
Candidates are required to give their answers in their own words  
as far as practicable.*

**Group-A**

**1. Answer all the following questions:**

**1 X 10 = 10**

- i. Stack is also called as
  - a) First in first out
  - b) First in last out
  - c) Last in last out
  - d) Last in first out
  - e) None of these
- ii. Any node is the path from the root to the node is called
  - a) Ancestor node
  - b) Successor node
  - c) Internal node
  - d) Predecessor node
  - e) None of these
- iii. Which of the following is not the type of queue?
  - a) Priority queue
  - b) Circular queue
  - c) Single ended queue
  - d) Ordinary queue
  - e) None of these
- iv. A graph is a collection of nodes, called \_\_\_\_\_ And line segments called arcs or \_\_\_\_\_ that connect pair of nodes.
  - a) vertices, paths
  - b) vertices, edges
  - c) graph node, edges
  - d) edges, vertices
  - e) None of these
- v. In \_\_\_\_\_ search start at the beginning of the list and check every element in the list.
  - a) Binary search
  - b) Hash Search
  - c) Linear search
  - d) Binary Tree search
  - e) None of these
- vi. In the \_\_\_\_\_ traversal we process all of a vertex's descendants before we move to an adjacent vertex.
  - a) Depth Limited
  - b) With First
  - c) Breadth First
  - d) Depth First
  - e) None of these
- vii. To represent hierarchical relationship between elements, which data structure is suitable?
  - a) Graph
  - b) Tree
  - c) Dequeue
  - d) Priority
  - e) None of these

- viii. Which of the following data structure is linear type?
- Stack
  - Graph
  - Trees
  - Binary tree
  - None of these
- ix. Herder node is used as sentinel in \_\_\_\_\_
- Queues
  - Stacks
  - Graphs
  - Binary tree
  - None of these
- x. Which of the following data structure can't store the nonhomogeneous data elements?
- Arrays
  - Stacks
  - Records
  - All of the above
  - None of these

### GROUP-B

**2. Answer any five questions:**

**2 X 5 = 10**

- What are the main objectives of Data structure?
- Define abstract data type and its advantages?
- List out the different ways to implement the list?
- Write down the difference between linear search and binary search.
- List out the advantages and disadvantages of circular link list.
- State the operations on stack?
- What is the purpose of top and pop?
- What is the difference between NULL and VOID?

### GROUP-C

**3. Answer any four questions:**

**5 X 4 = 20**

- Explain infix to postfix Conversion with an algorithm?
- Write an algorithm to delete an element using binary Search tree?
- Describe various operations on doubly link list with example?
- Explain in detail about the various storage devices with example.

v) Construct the tree-  
 Preorder:25,15,10,4,12,22,18,24,50,35,31,44,70,66,90  
 Postorder:4,12,10,18,24,22,15,31,44,35,66,90,70,50,25

- What do you mean by Link list? Write an algorithm to insert and delete a node in Singly Linked List?  
( 1 + 4 = 5 )

**GROUP-D**

4. **Answer any one question:**

1 X 10 = 10

i) What is Queue? Why it is known as FIFO? Write an algorithm to insert and delete an element from a simple Queue?

2 + 2 + 6 = 10

ii) **Short note:** (Any two from the followings)

2 X 5 = 10

a) Insertion Sort

b) AVL Tree

c) B+ tree

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