

B.C.A.- II (CBCS Pattern) Sem-IV  
**UBCAT403 : Paper-III : Algorithm and Data Structures**

P. Pages : 2

Time : Three Hours



**GUG/W/22/11977**

Max. Marks : 40

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- Notes :
1. All questions are compulsory and carry equal marks.
  2. Draw neat and labeled diagram wherever necessary.
  3. Avoid vague answers and write answer relevant and specific to questions.

**Either:**

1.
  - a) Explain different operations on Data structures. 4
  - b) Write an algorithm to count the total number of vowel character in a given strings. 4

**OR**

- c) Write a note on: 4
    - i) Insertion sort
    - ii) Merging.
  - d) Define Recursion explain advantages and disadvantages of recursion. 4

**Either:**

2.
  - a) Explain the concept of stacks and applications of stacks. 4
  - b) Describe the concept of priority queues and Deques in detail. 4

**OR**

- c) Write an algorithm to insert an element in a circular queue. 4
  - d) Differentiate between Queues and Stacks in detail. 4

**Either:**

3.
  - a) Define Linked List. Explain the concept of Dynamic memory management. 4
  - b) Write an algorithm to delete the node from single linked list. 4

**OR**

- c) What is garbage collection? Explain its need and importance. 4
  - d) Write an algorithm to traverse a Linked list. 4

**Either:**

4. a) Explain: 4
- i) Binary Tree ii) Binary Search Tree
- b) Write an algorithm to find minimum spanning tree using Krushal method. 4

**OR**

- c) Define Graph. Explain various terminology used in Graph. 4
- d) Write an algorithm to traverse a tree in In-order. 4
5. Solve all the questions.
- a) What is Array? Explain memory Representation of one-dimensional array. 2
- b) Explain applications of Queue. 2
- c) Explain concept of Doubled linked list. 2
- d) Write an algorithm for traversing a Graph. 2

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