(UG334) Roll No. .....

S.C.No.—2214301

B.C.A. EXAMINATION, Dec, 2024

(Main) (Batch 2022-23)

(Third Semester)

DATA STRUCTURES

22BCA301

Time : 3 Hours *Maximum Marks :* 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

1. Explain the following : **8×2=16**

(a) Write down the application of linked list.

(b) What is abstract data structure ?

(c) What is stack ?

(d) Write down the application of queue.

(e) Write down the property of binary tree.

(f) Give advantages of priority queue.

(g) Write down the application of graph.

(h) What is adjacency matrix ?

Unit I

2. Explain the following : 16

(a) What do you understand by the term data structure ? What are different types of Data Structure ?

(b) What is Linked List ? Write and explain the algorithm for create operations in single linked list with example.

3. (a) What is the drawbacks of single linked list ? Explain how to implement traverse operation's in circular linked list. 8

(b) Define Array. What are the limitations of array ? 8

Unit II

4. (a) Differentiate between Stack and Queue data structure. 8

   (b) Differentiate between Array and Multidimensional array. 8

5. (a) Write the method of address calculation in array with suitable example. 8

   (b) Explain, how can we represent Linear List Array ? 8

Unit III

6. (a) Give examples for complete binary tree and full binary tree. 8

   (b) Discuss threaded binary trees. 8

7. Explain the following :

   (a) Differentiate between B-Tree and B^+-Tree. 8

   (b) Write insertion and deletion operations on AVL trees. 8

Unit IV

8. (a) Difference between internal and external sorting. 8

   (b) How is Binary search better than linear search ? Explain. 8

9. (a) What is Sorting ? Explain any sorting algorithm with a suitable example. 8

   (b) What is graph and explain the methods of graph traversal ? 8