

DATA STRUCTURES

UNIT - I

PART-A

1. Illustrate The Usage of input and output Statements in C++?
2. Give The Syntax and Usage of function Definition in C++?
3. Demonstrate the usage of new and delete operators?
4. What is the purpose of Friend Function ? Explain with example?
5. Describe about Default arguments with example?
6. Explain about Function overloading with example?
7. Discuss about Access Specifiers in c++
8. List out and explain about Algorithm Specifications?
9. How to use try, catch and throw keywords?
10. Define time complexity and space complexity?

PART-B

11. Illustrate the usage of Function parameters with example
12. Describe about constructors and destructors with example program?
13. How to achieve Polymorphism with Operator overloading explain?
14. Explain about class templates and Function Templates with example?,
15. What is meant by Inheritance? What are the different types of Inheritances?
16. Draw and Summarize about Asymptotic Notations with example?

UNIT-2

PART A

1. What is a data structure
2. List some common data structures.
3. How data structures are classified?
4. Differentiate linear and non-linear data structure.
5. What are the ways of implementing linked list?
6. What are the types of linked lists?
7. How the singly linked lists can be represented?
8. How the doubly linked list can be represented?
9. What are benefits of ADT?
10. When singly linked list can be represented as circular linked list?
11. Where cursor implementation can be used?
12. List down the applications of List

13. What are the advantages of linked list?
14. Mention the demerits of linked list
15. What is a circular linked list?

PART-B

1. Explain the various operations of the list ADT with examples
2. Write the program for array implementation of lists
3. Write a C program for linked list implementation of list.
4. Explain the operations of singly linked lists
5. Explain the operations of doubly linked lists
6. Explain the operations of circularly linked lists
7. How polynomial manipulations are performed with lists? Explain the operations
8. Explain the steps involved in insertion and deletion into an singly and doubly linked list.
9. Explain Stack ADT and its operations
10. Explain array based implem

UNIT-3

PART-A

- 1) What is the need for priority queue?
- 2) What are the various implementations of priority queue.
- 3) What are the various operations performed by priority queue?
- 4) List out the two properties of binary heap.
- 5) What are the various basic heap operations?
- 6) Define binary Trees.
- 7) What are the various properties of binary trees?
- 8) Define threaded binary trees.

Part-B

1. Explain priority Queues and its implementations.
2. Explain binary heap.
3. Explain various binary tree traversal.
4. Explain various binary tree representations.

UNIT-4

PART-A

1. Define sorting
2. Mention the types of sorting
3. What do you mean by internal and external sorting?
4. Define bubble sort
5. How the insertion sort is done with the array?
6. What are the steps for selection sort?
7. What is meant by shell sort?
8. What are the steps in quick sort?
9. Define radix sort
10. What are the advantages of insertion sort
11. Define searching
12. Mention the types of searching
13. What is meant by linear search?

14. What is binary search?
15. Define hashing function
16. What is open addressing?
17. What are the collision resolution methods?
18. Define separate chaining

PART-B

1. Explain the sorting algorithms.
2. Explain the searching algorithms
3. Explain hashing
4. Explain open addressing
5. Write a C program to sort the elements using bubble sort.
6. Write a C program to perform searching operations using linear and binary search.
7. Explain in detail about separate chaining

UNIT-5

PART-A

1. Define non linear datastructure.
2. Define AVL tree.
3. List the rotations in AVL Tree.
4. How to calculate the balancing factor in AVL Tree 5. Define red-Black tree.
5. What is the searching time for Red –Black tree. 7. List the properties of Red-Black Tree.
6. What are the properties of B-Tree.
7. What are the rules for B-Tree.
8. What is Splay Tree.
9. List the Rotation in Splay Tree.
10. Define Binomial Heap.

PART-B

1. Explain AVL Tree with Suitable example.
2. Explain B-Tree with Suitable example.
3. Explain Red-BlackTree with Suitable example.
4. Explain Splay Tree with Suitable Example.
5. Explain BinomialHeap with Suitable example.
6. Explain fibonacciHeap with Suitable example
7. Explain briefly about disjoint set.
8. Build an AVL tree with the following values:
 - a. 15, 20, 24, 10, 13, 7, 30, 36, 25 and Delete 13 and 25.
9. Build an Splay tree with the following values: 9 2 90 53 4 64 95 59
10. Build an Red-Black tree with the following values: 15, 20, 24, 10, 13, 7, 30, 36, 25