1. What is a data structure?
2. Why do we need data structures?
3. List some common data structures.
4. How data structures are classified?
5. Differentiate linear and non-linear data structure.
6. Define ADT (Abstract Data Type)
7. Mention the features of ADT.
8. Define List ADT
9. What are the ways of implementing linked list?
10. What are the types of linked lists?
11. How the singly linked lists can be represented?
12. How the doubly linked list can be represented?
13. What are benefits of ADT?
14. List down the applications of List.
15. What are the advantages of linked list?
16. Mention the demerits of linked list
17. What are the operations performed in list?
18. What are the merits and demerits of array implementation of lists?
19. What is a circular linked list?
20. What are the advantages in the array implementation of list?
21. List three examples that uses linked list?
22. List out the different ways to implement the list?
23. Write the routine for insertion operation of singly linked list.
24. Advantages of Array over Linked List.
25. Disadvantages of Array over Linked List.
26. Advantages of Linked List over Array.
27. Disadvantages of Linked List over Array.
28. Explain the various operations of the list ADT with examples
29. Write the program for array implementation of lists.
30. Write a C program for linked list implementation of list.
31. Explain the operations of singly linked lists
32. Explain the operations of doubly linked lists
33. Explain the operations of circularly linked lists
34. How polynomial manipulations are performed with lists? Explain the operations.
35. Explain the steps involved in insertion and deletion into a singly and doubly linked list.
36. Define Stack.
37. What are the operations of the stack?
38. Write the routine to push an element into a stack.
39. How the operations performed on linked list implementation of stack?

40. What are the applications of stack?
41. What are the methods to implement stack in C?
42. How the stack is implemented by linked list?
43. Write the routine to pop an element from a stack.
44. Define queue.
45. What are the operations of a queue?
46. Write the routine to insert an element onto a queue.
47. What are the types of queue?
48. Define double ended queue
49. What are the methods to implement queue in C?
50. How the queue is implemented by linked list?
51. What are the applications of queue?
52. What are push and pop operations?
53. What are enqueue and dequeue operations?
54. Distinguish between stack and queue.
55. Convert the infix (a+b)*(c+d)/f into postfix & prefix expression
56. Write postfix from of the expression −A+B-C+D?
57. How do you test for an empty queue?
58. What are the postfix and prefix forms of the expression?
59. Define priority queue with diagram and give the operations.
60. Give the applications of priority queues.
61. How do you test for an empty stack?
62. What are the features of stacks?
63. Write a routine for IsEmpty condition of queue.
64. Explain Stack ADT and its operations
65. Explain array based implementation of stacks. Explain linked list implementation of stacks.
66. Explain the applications of Stacks
67. Explain how to evaluate arithmetic expressions using stacks.
68. Explain linked list implementation of queues.
69. Explain the applications of queues.
70. Explain circular queue and its implementation.
71. Explain double ended queue and its operations.
72. Define non-linear data structure.
73. Define tree?
74. Explain the representations of priority queue.
75. Convert the infix expression (A-B/C)*(D/E-F) into a postfix.
76. What are the steps to convert a general tree into binary tree?
77. What is meant by directed tree?
78. What is a ordered tree?
79. What are the applications of binary tree?
80. What is meant by traversing?
81. What are the different types of traversing?
82. What are the two methods of binary tree implementation?
83. What is a balance factor in AVL trees?
84. What is meant by pivot node?

85. What is the length of the path in a tree?
86. What is meant by binary search tree?
87. What is the various representation of a binary tree?
88. List the application of tree.
89. Define binary tree and give the binary tree node structure.
90. What are the different ways of representing a Binary Tree?
91. Give the pre & postfix form of the expression (a + ((b*(c-e))/f).
92. Define a heap. How can it be used to represent a priority queue?
93. What is binary heap?
94. Define Strictly binary tree?
95. Define complete binary tree?
96. What is an almost complete binary tree?
97. Define AVL Tree.
98. Define Tree. Explain the tree traversals with algorithms and examples.
99. Construct an expression tree for the expression (a + b * c) +((d * e + 1) * g).
100. Explain binary search tree ADT in detail.
101. Explain AVL tree ADT in detail.
102. Explain B tree and B+ tree ADT in detail.
103. Define Graph?
104. Define biconnected graph.
105. Define shortest path problem?
106. Define adjacent nodes?
107. What is a directed graph?
108. What is a undirected graph?
109. What is a simple graph?
110. What is a weighted graph?
111. Name the different ways of representing a graph?
112. What is an undirected acyclic graph?
113. What are the two traversal strategies used in traversing a graph?
114. What is a minimum spanning tree?
115. What is the use of Kruskal's algorithm and who discovered it?
116. What is the use of Dijksra's algorithm?
117. Prove that the maximum number of edges that a graph with n Vertices is n*(n-1)/2.
118. Define minimum cost spanning tree?
119. Define Adjacency in graph.
120. Define Basic Operations of Graph.
121. What is Levels in graph?
122. Explain the various representation of graph with example in detail?
123. Explain Dijkstra's algorithm with an example?
124. Explain Prim's algorithm with an example?
125. Explain Krushal's algorithm with an example?
126. Write and explain the prim's algorithm and depth first search algorithm.
127. Explain the breadth first search algorithm.
128. Define sorting
129. Mention the types of sorting

130. What do you mean by internal and external sorting?
131. How the insertion sort is done with the array?
132. Define hashing.
133. Hash function takes an identifier and computes the address of that identifier in the hash table using some. What is the need for hashing?
134. List out the different types of hashing functions?
135. What are the problems in hashing?
136. Write the function in C for insertion sort ?
137. Write differerentiate between merge sort and quick sort?
138. Mention some methods for choosing the pivot element in quick sort?
139. What is sorting?
140. What is mergesort?
141. Compare the various hashing techniques.
142. What are applications of hashing?
143. What are the various factors to be considered in deciding a sorting algorithm?
144. What is the main idea behind the selection sort?
145. Is the heap sort always better than the quick sort?
146. Define searching.
147. Mention the types of searching.
148. What is meant by linear search?
149. What is binary search?
150. Explain the sorting algorithms.
151. Explain the searching algorithms.
152. Write a C program to sort the elements using bubble sort, insertion sort and radix sort.
153. Write a C program to perform searching operations using linear and binary search.