2.
Construct a binary search tree (BST) out of the following sequence of integers. The constructed tree should also satisfy the AVL criteria. Assume that in our BST – for every node, left subtree values are less than the node and right subtree values are greater than nodes.
70, 30, 50, 90, 110, 80, 60

What is the order in which the rotations will be performed while constructing the tree?

1. Left Right Left Right
2. Right Left Right Left Right
3. Right Left Right Left
4. Left Right Left Right Left

3.
A digraph said to be COMPLETE, if it has N vertices and ……edges.

1. N*N
2. N-1
3. N*(N-1)
4. N*(N-1)/2

4.
The inorder traversal of some binary tree produces the sequence DBEAFC, and the postorder transversal of the same tree produced the sequence DEBFCA. Which of the following is correct preorder transversal sequence?

1. DBAECF
2. ABEDFC
3. ABDECF
4. none of the above

5.
If graph G has no edges then corresponding adjacency matrix is

1. unit matrix
2. zero matrix
3. matrix with all 1's
4. None of the above

7.
The postfix equivalent of prefix expression * + a b – c d is

1. a b + c d - *
2. a b c d + - *
3. a b + c d * -
4. a b + - c d *

8.
What is the use of Dijkestra algorithm?

1. Job sequencing
2. Find minimum spanning tree
3. Single source shortest path
4. None of these

12.
What is the recursive traversing of Pre-order traversal

1. traverse the left sub-tree, visit the root node and traverse the right sub-tree
2. visit the root node, traverse the left sub-tree, and traverse the right sub-tree
3. traverse the left sub-tree, traverse the right sub-tree, and visit the root node
4. none of the above

14.
1. Suppose prevnode, p, nextnode are three consecutive nodes in a Doubly Linked List. Deletion of node p in this Doubly Linked List can be represented by which code snippet? [getPrev() method returns the prev node and getNext() method returns the next node in DLL.]
[SetPrev() method sets the prev node value and setNext() method sets the next node value in DLL.]

1. p.getPrev().setPrev(p.getNext());
   p.getNext().setNext(p.getPrev());
2. p.getPrev().setNext(p.getPrev());
   p.getNext().setPrev(p.getNext());
3. p.getNext().setPrev(p.getPrev());
   p.getPrev().setNext(p.getNext());
4. None of these

15.
What is not true for linear collision processing?

5. It is easier to program
6. It may include more collision
7. It requires space for links
8. All are true

17.
If you want to store the name and marks of N students, which of the following is the correct choice?

1. An array of structures which contains name and marks as a field.
2. A structure containing arrays of Names and arrays of Marks
3. An array of names and Array of marks
4. All of the above

25.
In-order, pre-order and post-order can be applied to

1. any trees
2. only binary trees
3. any trees other than binary trees
4. None of the above

30.
Which of the following is True about the Spanning Tree?

1. A spanning is minimal set of edges in Graph that contains no cycle, connect all the vertices
2. A spanning is a maximal set of edges in Graph that connect all vertices.
3. A Graph will have only one possible spanning tree
4. None of the above

31.
Statement 1: When applying Backtracking algorithm, all choices made can be undone when needed.
Statement 2: When applying Backtracking algorithm, the worst case scenario is, it exhaustively tries all paths, traversing the entire search space

1. Both, Statement 1 and 2, are true
2. Statement 1 is true, Statement 2 is false
3. Statement 2 is true, Statement 1 is false
4. Both, Statement 1 and 2, are false

36.
Partition and exchange type of sort is….

1. Quick sort
2. Tree sort
3. Heap sort
4. Bubble sort

1.
The element at the root of heap is

1. largest
2. smallest
3. depending on type of heap it may be smallest or largest
4. none of the above

6.
What this code is doing in a Binary search tree?

```
void do_job(BST node){
If(node!=NULL)
{
 do_job (node.left());
 do_job (node.right());
 cout<<node.data;
}
}
```

1. Traversing post-order
2. Traversing pre-order
3. Traversing in-order
4. Finding the dept

9.
Which of the following are not Associative Containers?

1. priority queue
2. map
3. multimap
4. multiset

10.
Which of the following types of Linked List support forward and backward traversal?

1. Singly Linked List
2. Doubly Linked List
3. Circular Singly Linked List
4. All of these

11.
In _____the exploration of node is suspended as soon as new unexplored node is reached.

1. BFS
2. DFS
3. Prims algorithm
4. Kruskal's algorithm

13.
The integrity of transmitted data can be verified by using ……

1. Hash Message Authentication Code (HMAC)
2. Timestamp comparison
3. Data length comparison
4. None of these

16.
Convert the following infix expression into their Postfix form
(X^Y)/(A*B)

1. / ^ XY * A B
2. XY ^ AB * /
3. X ^ Y AB * /
4. none of the above

18.
Merge sort uses _____ strategy

1. backtracking
2. heuristic
3. greedy
4. divide and conquer

19.
Worst case time complexity for linear search algorithm is….

1. O(n)
2. O(log n)
3. $O(n^2)$
4. O(n log n)

20.
Identify the correct sequence of below actions for implementing decisions?
I. Create an action plan
II. Prioritize actions and assign roles
III. Break solution into action steps
IV.Follow-up at milestones

1. I, III, II, IV
2. I, II, III, IV
3. I, IV, II, III
4. IV, III, II, I

21.
Which of the following are related to stack

1. push
2. pop
3. LIFO
4. All of the above

22.
What is the best case complexity of quick sort?

1. Ω(n)
2. Θ(logn)
3. Ω(n(log n))
4. Ω(log n)

23.
Depth First Search graph traversal method makes use of ……. data structure.

1. TREE
2. STACK
3. QUEUE
4. LINKED LIST

24.
We can efficiently reverse a string using a

1. linear queue
2. circular queue
3. stack
4. doubly linked list

26.
Queue can be used to implement

1. radix sort
2. quick sort
3. recursion
4. depth first search

27.
A tree node with no children is called as ……. node.

1. Leaf node
2. Root node
3. Parent node
4. Ancestor node

28.
What is the worst-case performance of Selection sort algorithm?

1. O(log n)
2. O(n* n)
3. O(n)
4. O(n log n)

29.
Which of the following algorithm design techniques is used in finding all pairs of shortest distances in a graph (Warshall algorithms)?

1. Dynamic programming
2. Back Tracking
3. Greedy
4. Divide & Conquer

32.
Pick the odd man out of searching

1. linear search
2. binary search
3. bucket search
4. none of the above

33.
How many nodes are present in binary tree of height 2?

1. 5
2. 6
3. 7
4. 4

34.
What sorting algorithms have equal best case and worst case time complexity?

1. heap and selection sort
2. insertion sort & merge sort
3. merge sort and heap sort
4. None of these

35.
If the number of records to be sorted is small, then ..... can be efficient.

1. Merge sorT
2. Heap sort
3. Selection sort
4. Bubble sort

37.
Value returned by Hash Function is called as…….

1. Digest
2. Hash value
3. Hash code
4. All of these

38.
Which of the following are data structures

1. stack
2. queue
3. linked list
4. all of the above

39.
In which of the following tree height of left sub tree and height of right sub tree differ at most by one?

1. AVL Tree
2. Expression Tree
3. Threaded Binary Tree
4. Binary Search Tree

40.
Deleting a node in a linked list is a simple matter of using the delete operator to free the node’s

1. True
2. False