1. Binary Search algorithm is also called as____

Answers

1. Half Interval Search
2. Logarithmic Search
3. **Both of the above**
4. Sequential Search

2. Which of the following sorting algorithm is not in place on an array data structure?

Answers

1. Insertion Sort

2. **Merge sort**

3. Quick Sort

4. Selection Sort

3. Merge Sort works on two principles _____

Answers

1. to sort smaller size array and to merge two already sorted array operations are not efficient.

2. to sort smaller size array and to merge two already sorted array operations are efficient.

3. to sort smaller size array is efficient and to merge two already sorted array is not efficient.

4. to sort smaller size array is not efficient and to merge two already sorted array is efficient.

4. The minimum number of comparisons required to determine if an integer appears more than n/2 times in a sorted array of n integers is___

Answers

1. O(n)

2. **O(log n)**

3. O(n log n)

4. O(1)

5. To sort 1 GB of data with only 100 MB of main memory which of the following sorting algorithm will be the efficient one?

Answers

1. Heap Sort

2. Quick Sort

3. **Merge Sort**

4. Insertion Sort

6. Which of the following sorting algorithm can be used to sort a linked list with minimum time complexity?

Answers

1. Insertion Sort

2. Quick Sort

3. Heap Sort

4. **Merge Sort**

7. Which of the following sorting algorithm takes minimum time when all elements are same.

Answers

1. **Insertion Sort**

2. Quick Sort

3. Merge Sort

4. Bubble Sort

8. Which of the following sorting algorithm is adaptive in nature?

Answers

1. Quick Sort

2. Merge Sort

3. Bubble Sort

4. **Insertion sort**

9. Which of the following statement is false about a singly circular linked list?

Answers

1. traversal can be start from only first node and can be traversed only in a forward direction

2. previous node of any node cannot be accessed

3. addition & deletion operations can be performe in O(1) time

4. any node can be revisited

10. The Advantage/s of a doubly-linked list over the singly-linked list is____

Answers

1. doubly linked list node size is greater than node size in singly linked list

2. addition operation is efficient

3. deletion operation is efficient

4. all of above

11. Which of the following point/s is/are true about Linked List data structure when it is compared with array_____

Answers

1. Arrays have better cache locality that can make them better in terms of performance.

2. It is easy to insert and delete elements in linked list

3. Random access is not allowed in a typical implementation of linked lists

4. The size of array has to be pre-decided, linked lists can change their size during runtime.

5. **All of the above**

12. Which of the following statement is false about doubly circular linked list ____

Answers

1. list can be traversed in both forward as well as in a backward direction

2. traversal can be start either from first node or from last node in O(1) time.

3. addition & deletion operations are efficient as it takes O(1) time.

4. searching operation takes O(log n) time.

13. Prefix notation is also called as ____

Answers

1. Reverse Polish Notation

2. Reverse Notation

3. Polish Reverse Notation

4. **Polish Notation**

14. The priority queue is a queue in which _____

Answers

1. element having highest priority can be added first

2. element having highest priority can be deleted first

3. element can be added in any order and only element can be deleted first having highest priority

4. element can be added first only having highest priority and can be deleted in any order

15. The following postfix expression with single digit operands is evaluated using a stack:

8 2 3 ^ / 2 3 * + 5 1 * -

Note that ^ is the exponentiation operator. The top two elements of the stack after the first * is ___

Answers

1. **6,1**

2. 5,7

3. 3,2

4. 1,5

16. Which of the following operation cannot be performed on the queue?

Answers

1. Insert

2. Delete

3. **Traverse**

4. None of above

17. What is the queue full condition in the dynamic queue?

Answers

1. rear == size-1

2. front == (rear+1)%SIZE

3. front == rear+1

4. front == size

5. **None of the above**

18. Priority queue can be implemented efficiently by using _____

Answers

1. binary heap

2. balanced binary search tree

3. array

4. linked list

19. Which of the following statement is false about deque____

Answers

1. elements can be added as well deleted from both the ends

2. deque can be implemented efficiently by using doubly linear linked list with tail pointer

3. deque can be implemented efficiently by using doubly circular linked list

4. **None of the above**

20. A binary tree has 20 leaves. The number of nodes in the tree having two children is ____

Answers

1. 18

2. **19**

3. 17

4. 20

21. A BST is generated by inserting in order the following integers:

50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24.

The number of nodes in the left subtree and right subtree of the root respectively is____

Answers

1. 4 , 7

2. **7 , 4**

3. 8 , 3

4. 3 , 8

22. BST can be said balanced__

Answers

1. height of left subtree is greater or equal to height of right subtree

2. height of left subtree is smaller or equal to height of right subtree

3. for every subtree in a bst difference between height of left subtree and height of right subtree is in between -1 to 1

4. for every subtree in a bst difference between height of left subtree and height of right subtree is 0.

23. Given two Balanced BST's, B1 having n elements and B2 having m elements, what is the time complexity of the algorithm to merge these trees to form another balanced BST containing m+n elements?

Answers

1. **O(m + n)**

2. O(m log n)

3. O(n log m)

4. O(log O)

24. In the delete operation of BST, we need inorder successor (or predecessor) of a node when the node to be deleted has both left and right child as non-empty. Which of the following is true about inorder successor needed in delete operation?

Answers

1. Inorder Successor is always a leaf node

2. **Inorder successor is always either a leaf node or a node with empty left child**

3. Inorder successor may be an ancestor of the node

4. Inorder successor is always either a leaf node or a node with empty right child

25. The following elements are added into BST in the given order:

10, 1, 3, 5, 15, 12, 16.

What is the height of the BST?

Answers

1. 2

2. **3**

3. 4

4. 6

26. The preorder traversal sequence of a BST is

30, 20, 10, 15, 25, 23, 39, 35, 42.

Which one of the following is the postorder traversal sequence of the same tree?

Answers

1. 10, 20, 15, 23, 25, 35, 42, 39, 30

2. 15, 10, 25, 23, 20, 42, 35, 39, 30

3. 15, 20, 10, 23, 25, 42, 35, 39, 30

4. **15, 10, 23, 25, 20, 35, 42, 39, 30**

27. What are the worst-case time complexities of addition and deletion of element operations into a BST?

Answers

1. O(log n)

2. **O(n)**

3. O(n) to add and O(log n) to delete

4. O(log n) to add and O(n) to delete

28. What is the maximum height of any AVL-tree with 7 nodes? Assume that the height of a tree with a single node is 0.

Answers

1. 2

2. **3**

3. 4

4. 5

29. Which of the following tree traversal method prints the data in sorted order in a BST?

Answers

1. Preorder

2. **Inorder**

3. Postorder

4. Level order

30. Which of the following statement is false about BST?

Answers

1. Minimum height of BST is log n, for "n" no. of elements in it

2. Maximum height of BST is n, for "n" no. of elements in it

3. **In a BST addition, deletion and searching operations can be performed in O(log n) time**

4. Self Balanced BST is also called as AVL tree

31. Consider an undirected unweighted graph G1. Let a BFS traversal of G1 be done starting from a vertex s. Let d(s, u) and d(s, v) be the lengths of the shortest paths from s to u and v respectively, in G1. lf u is visited before v during the BFS traversal, which of the following statements is correct?

Answers

1. d(s, u) < d (s, v)

2. d(s, u) > d (s, v)

3. d(s, u) <= d (s, v)

4. None of the above

32. Given an undirected graph G1 with V vertices and E edges, the sum of the degrees of all vertices is____

Answers

1. E

2. **2E**

3. V

4. 2V

33. In an unweighted, undirected connected graph, the shortest path from a vertex 0 to every other vertex is computed most efficiently, in terms of time complexity by_____

Answers

1. Dijkstra's algorithm starting from vertex 0.

2. Warshall's Floyd algorithm

3. Performing a DFS starting from vertex 0.

4. **Performing a BFS starting from vertex 0.**

34. The Floyd-Warshall algorithm for all-pair shortest paths computation is based on ____

Answers

1. Greedy paradigm.

2. Divide-and-Conquer paradigm.

3. **Dynamic Programming paradigm.**

4. None of above

35. Which of the following algorithm is used to find the shortest path in an undirected weighted graph contains negative weights.

Answers

1. Dijkstra's shortest path algorithm

2. Warshall Floyd Algorithm

3. Prim's Algorithm

4. **Bellman Ford Algorithm**

36. Which of the following statement is not true in a graph?

Answers

1. in a given graph if any vertex is connected to remaining all vertices then it is called as connected graph.

2. graph without cycle and which is not connected is called as tree

3. in a given graph if all the vertices are adjacent to remaining all vertieces then it is called as complete graph

4. graph can be a tree but tree cannot be a graph

37. Given a hash table T with 25 slots that stores 2000 elements, the load factor α for T is ___

Answers

1. **80**

2. 0.0125

3. 8000

4. 1.25

38. The Standard Template Library (STL) consists of four main components. What are those components?

Answers

1. ADT, Structure, Class and Function Objects.

2. Containers, Algorithms, Function Objects and Statements.

3. **Containers, Algorithms, Function Objects and Iterators.**

4. None of the above.

39. We use a dynamic programming approach when ___

Answers

1. It provides optimal solution

2. The solution has optimal substructure

3. **The given problem can be reduced to 3-SAT problem**

4. Its faster than Greedy approach

40. How to represent Adjancy Matrix in graph?

Answers

1. **It is Matrix a[v][v] where v is no of vertices. a[i][j] = 1 if i and j are adjacent = 0 otherwise**

2. It is Matrix a[v][v] where v is no of edges. a[i][j] = 1 if i and j are not adjacent = 0 otherwise

3. Both A and B are correct

4. None of ABOVE