Started on	Tuesday, 16 December 2025, 12:47 PM
State	Finished
Completed on	Tuesday, 16 December 2025, 12:53 PM
Time taken	6 mins 1 sec
Marks	28.00/30.00
Grade	**93.33** out of 100.00

Question 1

Complete

Mark 1.00 out of 1.00

What is the output of the following code?

```
Stack<Integer> s = new Stack<>();
s.push(10);
s.push(20);
s.pop();
System.out.print(s.peek());
```

- a. Compilation error
- b. 10
- c. Runtime exception
- d. 20

Question 2

Complete

Mark 1.00 out of 1.00

What is the output of the following code?

```
Queue<Integer> q = new LinkedList<>();
q.offer(1);
q.offer(2);
q.poll();
System.out.print(q.peek());
```

- a. 2
- b. null
- c. Runtime exception
- d. 1

Question 3

Complete

Mark 1.00 out of 1.00

What is the output of the following code?

```
LinkedList<Integer> list = new LinkedList<>();
list.add(1);
list.add(2);
list.add(1);
list.remove((Integer)1);
System.out.print(list);
```

a. [1]
b. [1, 2]
c. [2, 1]
d. Compilation error

Question 4

Complete

Mark 1.00 out of 1.00

What is the output of the following code?

```
Deque<Integer> dq = new ArrayDeque<>();
dq.addFirst(5);
dq.addLast(10);
dq.removeFirst();
System.out.print(dq.peek());
```

a. null
b. 5
c. Runtime exception
d. 10

Question 5

Complete

Mark 1.00 out of 1.00

In a binary search tree, which traversal gives elements in sorted order?

a. Postorder
b. Level order
c. Preorder
d. Inorder

Question 6

Complete

Mark 1.00 out of 1.00

What is the degree of a node in a graph?

- a. Number of paths from the node
- b. Weight of edges
- c. Number of vertices in the graph
- d. Number of edges connected to the node

Question 7

Complete

Mark 1.00 out of 1.00

What is the maximum number of nodes in a binary tree of height h?

- a. 2^h - 1
- b. h^2
- c. h + 1
- d. 2^h

Question 8

Complete

Mark 1.00 out of 1.00

What is the time complexity of BFS using adjacency list representation?

- a. O(V × E)
- b. O(V)
- c. O(V + E)
- d. O(E)

Question 9

Complete

Mark 1.00 out of 1.00

What is the time complexity of enqueue and dequeue in a circular queue?

- a. O(n log n)
- b. O👎
- c. O(log n)
- d. O(1)

Question 10

Complete

Mark 1.00 out of 1.00

What is the time complexity of inserting an element into a balanced BST?

- a. O👎
- b. O(1)
- c. O(n log n)
- d. O(log n)

Question 11

Complete

Mark 1.00 out of 1.00

What is the time complexity of searching an element in an unsorted linked list?

- a. O👎
- b. O(n log n)
- c. O(1)
- d. O(log n)

Question 12

Complete

Mark 0.00 out of 1.00

What is the worst-case height of a binary search tree with n nodes?

- a. log n
- b. n
- c. n/2
- d. 2 log n

Question 13

Complete

Mark 1.00 out of 1.00

What is the worst-case time complexity of push operation in a stack implemented using an array?

- a. O👎
- b. O(n log n)
- c. O(1)
- d. O(log n)

Question 14

Complete

Mark 1.00 out of 1.00

Which condition must always be true for a binary search tree?

- a. Root < Right subtree only
- b. Left subtree > Root
- c. Left subtree < Root < Right subtree
- d. Tree must be complete

Question 15

Complete

Mark 1.00 out of 1.00

Which data structure is best suited to implement recursion internally?

- a. Linked List
- b. Stack
- c. Queue
- d. Tree

Question 16

Complete

Mark 1.00 out of 1.00

Which data structure is used to detect cycles in an undirected graph?

- a. Stack
- b. Priority Queue
- c. Queue
- d. Disjoint Set (Union-Find)

Question 17

Complete

Mark 1.00 out of 1.00

Which graph algorithm is used to find the shortest path in an unweighted graph?

- a. Bellman-Ford
- b. DFS
- c. BFS
- d. Dijkstra

Question 18

Complete

Mark 1.00 out of 1.00

Which graph representation allows O(1) edge existence check?

a. Edge list
b. Tree representation
c. Adjacency list
d. Adjacency matrix

Question 19

Complete

Mark 1.00 out of 1.00

Which graph traversal uses a queue internally?

a. Prim
b. BFS
c. Dijkstra
d. DFS

Question 20

Complete

Mark 1.00 out of 1.00

Which Java collection implements a priority queue?

a. LinkedList
b. TreeSet
c. PriorityQueue
d. ArrayDeque

Question 21

Complete

Mark 1.00 out of 1.00

Which of the following is NOT an application of stack?

a. Breadth-first search
b. Function calls
c. Expression evaluation
d. Undo operation

Question 22

Complete

Mark 1.00 out of 1.00

Which operation in a singly linked list requires traversal to the end of the list?

- a. Insertion at tail
- b. Deletion at head
- c. Insertion at head
- d. Accessing head node

Question 23

Complete

Mark 1.00 out of 1.00

Which operation is costly in a doubly linked list compared to singly linked list?

- a. Insertion at head
- b. Backward traversal
- c. Deletion at head
- d. Forward traversal

Question 24

Complete

Mark 1.00 out of 1.00

Which operation is NOT possible in O(1) time for a singly linked list?

- a. Insert at beginning
- b. Insert at end (without tail reference)
- c. Access first element
- d. Delete first node

Question 25

Complete

Mark 1.00 out of 1.00

Which property makes a queue different from a stack?

- a. Dynamic size
- b. FIFO behavior
- c. LIFO behavior
- d. Memory allocation

Question 26

Complete

Mark 1.00 out of 1.00

Which queue implementation allows insertion and deletion at both ends?

- a. Priority Queue
- b. Circular Queue
- c. Simple Queue
- d. Deque

Question 27

Complete

Mark 0.00 out of 1.00

Which representation is more space-efficient for sparse graphs?

- a. Adjacency list
- b. Adjacency matrix
- c. Edge list
- d. Incidence matrix

Question 28

Complete

Mark 1.00 out of 1.00

Which traversal is used to copy a binary tree?

- a. Preorder
- b. Inorder
- c. Level order
- d. Postorder

Question 29

Complete

Mark 1.00 out of 1.00

Which traversal of a binary tree prints the root node last?

- a. Postorder
- b. Inorder
- c. Preorder
- d. Level order

Question 30

Complete

Mark 1.00 out of 1.00

Which tree traversal is equivalent to DFS?

a. Inorder
b. Level order
c. Both B and C
d. Preorder