### \*\*Questions:\*\*

1. What is the time complexity of binary search?

- a) O(n)

- b) O(log n)

- c) O(n^2)

- d) O(1)

2. Which data structure is used for depth-first search (DFS)?

- a) Queue

- b) Stack

- c) Linked list

- d) Hash table

3. Which of the following is not a stable sorting algorithm?

- a) Merge sort

- b) Bubble sort

- c) Quick sort

- d) Insertion sort

4. Which data structure is used in breadth-first search (BFS)?

- a) Stack

- b) Queue

- c) Tree

- d) Graph

5. In a max heap, the largest element is found at:

- a) Root

- b) Any leaf node

- c) Leftmost node

- d) Rightmost node

6. Which of the following is the best time complexity for sorting algorithms?

- a) O(n^2)

- b) O(n log n)

- c) O(n)

- d) O(log n)

7. What is the worst-case time complexity of QuickSort?

- a) O(n log n)

- b) O(n)

- c) O(n^2)

- d) O(log n)

8. Which of the following data structures allows elements to be inserted from one end and removed from the other end?

- a) Stack

- b) Queue

- c) Array

- d) Tree

9. What is the time complexity of inserting an element at the beginning of an array?

- a) O(n)

- b) O(1)

- c) O(log n)

- d) O(n^2)

10. Which data structure follows the FIFO principle?

- a) Stack

- b) Queue

- c) HashMap

- d) Binary tree

11. Which of the following has the worst time complexity for finding an element?

- a) HashMap

- b) Binary search tree

- c) Linked list

- d) Array

12. Which of the following algorithms is used to find the shortest path in a weighted graph?

- a) BFS

- b) Dijkstra's algorithm

- c) Depth-first search

- d) Prim’s algorithm

13. Which of the following data structures is used to implement recursion?

- a) Stack

- b) Queue

- c) Linked List

- d) Array

14. The operation of processing each element in a list is known as:

- a) Merging

- b) Sorting

- c) Inserting

- d) Traversal

15. What is the best data structure to use for implementing a priority queue?

- a) Stack

- b) Heap

- c) Array

- d) Linked List

16. Which sorting algorithm is best suited for almost sorted arrays?

- a) Quick sort

- b) Bubble sort

- c) Insertion sort

- d) Selection sort

17. Which of the following is an application of a stack?

- a) Infix to postfix conversion

- b) Dijkstra’s shortest path algorithm

- c) Prim's algorithm

- d) None of the above

18. What is the height of a complete binary tree with n nodes?

- a) O(n)

- b) O(log n)

- c) O(n log n)

- d) O(1)

19. Which of the following is used to prevent race conditions in multithreading?

- a) Semaphore

- b) HashMap

- c) Linked List

- d) Queue

20. Which traversal of a binary search tree gives the elements in sorted order?

- a) Pre-order

- b) In-order

- c) Post-order

- d) Level-order

### \*\*Answers:\*\*

1. \*\*Answer:\*\* b) O(log n)

2. \*\*Answer:\*\* b) Stack

3. \*\*Answer:\*\* c) Quick sort

4. \*\*Answer:\*\* b) Queue

5. \*\*Answer:\*\* a) Root

6. \*\*Answer:\*\* b) O(n log n)

7. \*\*Answer:\*\* c) O(n^2)

8. \*\*Answer:\*\* b) Queue

9. \*\*Answer:\*\* a) O(n)

10. \*\*Answer:\*\* b) Queue

11. \*\*Answer:\*\* c) Linked list

12. \*\*Answer:\*\* b) Dijkstra's algorithm

13. \*\*Answer:\*\* a) Stack

14. \*\*Answer:\*\* d) Traversal

15. \*\*Answer:\*\* b) Heap

16. \*\*Answer:\*\* c) Insertion sort

17. \*\*Answer:\*\* a) Infix to postfix conversion

18. \*\*Answer:\*\* b) O(log n)

19. \*\*Answer:\*\* a) Semaphore

20. \*\*Answer:\*\* b) In-order

Let me know if you'd like to continue with more questions or need explanations for any specific question!