1. In a stack, the insertions and deletions are made at _____ end.

   One   Two   Three   None of the above

2. The Stacks follows the _____ rule.

   LIFO   FIFO   Both   None of the above

3. In a queue, the deletions take place at _____ end.

   Rear   Top   Front   None of the above

4. The queues follow the _____ rule.

   LIFO   FIFO   Both   None of the above

5. In a binary search tree, the elements in the right sub-tree are always _____ than the root node.

   Smaller   Greater   Both of the above   None of the above

6. The RAM model of computation stands for

   Random Access Memory   Random Access Machine   Realtime Access Machine   None of the above

7. An algorithm

   Is machine independent   Can be written in any language   Must be written before a program   All of the above

8. One simple operation of mathematics like addition/subtraction/multiplication takes _____ step(s).

   One   Two   Three   Four

9. The RAM model of computation consists of

   A read-only input tape   A write-only input tape   A fixed program   All of the above

10. Which of these is a primitive operation?

    Calling a method   Comparing two numbers   Indexing into an array   All of the above

11. Which of these is written at the time of designing?

    Algorithm   Program   Test cases   None of the above

An algorithm

12.

| Can be written in English sentences | Not dependent upon hardware of computer | Not dependent upon operating system | **All of above** |

13. An algorithm must have the characteristics as

| Effectiveness | Definiteness | Finiteness | **All of the above** |

14. What are criteria for algorithm analysis?

| Time | Space | **Both of the above** | None of the above |

15. In analysis of algorithm, the constants are represented as

| O (0) | **O (1)** | O (Constant) | None of the above |

16. The function $f(n) = 2n^2 + 3n + 1$ has the time complexity as

| O(n3) | **O(n2)** | O(n) | None of the above |

17. Which of these notations is upper bound of a function?

| Theta notation | **Big Oh notation** | Big Omega notation | None of the above |

18. What kind of problem can occur in recursive programs?

| **Stack overflow** | Stack underflow | Queue underflow | Queue overflow |

19. In which situation, the stack overflow occurs?

| Base case is not defined | Base case is not reached | **Either of the above** | None of the above |

20. Recursion helps in

| Avoiding the redundancy in code | Easy maintenance of code | Compacting the code | **All of the above** |

21. Recursion is a method in which the solution of a problem depends on _____

| Larger instances of different problems | Larger instances of the same problem | **Smaller instances of the same problem** | Smaller instances of different problems |

22. For _____ we can't give the average bound.

| Decreasing functions | Increasing functions | **Factorial functions** | None of the above |

23. According to Master's theorem for decreasing function T(n) = T(n-1) + n, what will be time complexity?

| O(n) | O(n2) | O(n-1) | None of the above |

24. The time complexity of decreasing function is $O(n^k a^n)$ when

| a = 1 | a < 1 | a > 1 | None of the above |

25. The time complexity of decreasing function is $O(n*f(n))$ when

| a = 1 | a < 1 | a > 1 | None of the above |

26. For $T(n) = 2T(n-1) + 1$, what will be time complexity?

| $O(n^2)$ | Correct $O(2^n)$ | $O(n^3)$ | None of the above |

27. The time complexity of decreasing function is $O(n^k a^n)$ when

| a = 1 | a < 1 | a > 1 | None of the above |

28. A computational problem can be of

| Decision type | Optimization type | Function type | All of these types |

29. Which of these represents the problem not the strategies?

| Divide and Conquer | Merge sort | Backtracking | Branch and Bound |

30. Which of these is the most straightforward way of solving the problems?

| Divide and Conquer | Greedy method | Backtracking | Branch and Bound |

31. Which of these is used for solving only minimization problems?

| Divide and Conquer | Greedy method | Backtracking | Branch and Bound |

32. Which approach is followed by backtracking?

| DFS | BFS | Both of the above | None of the above |

33. An algorithm

| Is machine independent | Can be written in any language | Must be written before a program | All of the above |

34. In analysis of algorithm, the constants are represented as

35.

The function f(n) = 2n² + 3n + 1 has the time complexity as

| $O(n^3)$ | Correct $O(n^2)$ | $O(n)$ | None of the above |

36.

According to Master's theorem for decreasing function T(n) = T(n-1) + n, what will be time complexity?

| $O(n)$ | Correct $O(n^2)$ | $O(n-1)$ | None of the above |

37. For T(n) = 2T(n-1) + 1, what will be time complexity?

| $O(n^2)$ | Correct $O(2^n)$ | $O(n^3)$ | None of the above |

38.

The time complexity of decreasing function is $O(n^k a^n)$ when

| $a = 1$ | $a < 1$ | Correct $a > 1$ | None of the above |

39.

The time complexity of decreasing function is O(n*f(n)) when

| Correct $a = 1$ | $a < 1$ | $a > 1$ | None of the above |