Online Assessment (Even Sem/Part-I/Part-II Examinations 2019 - 2020

Course Name - Design & Analysis of Algorithm
Course Code - MCS201

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Answer all the questions. Each question carry one mark.

9. 1. Two main measures for the efficiency of an algorithm are

Mark only one oval.

- Processor and memory
- Complexity and capacity
- Time and space
- Data and space

10. 2. for I = 1 to n do begin sum = sum A[i]; if i = 100 then break; end the time complexity of the above algorithm is

Mark only one oval.

- O(1)
- O(n)
- O(100)
- None of these

11. 3. The worst-case time complexity of Quick Sort is_____.

Mark only one oval.

- O(n^2)
- O(log n)
- O(n)
- O(n logn)

12. 4. Which of the following is not true about QuickSort?

Mark only one oval.

- in-place algorithm
- pivot position can be changed
- adaptive sorting algorithm
- can be implemented as a stable sort

13. 5. Consider the Quick sort algorithm in which the partitioning procedure splits elements into two sub-arrays and each sub-array contains at least one-fourth of the elements. Let T(n) be the number of comparisons required to sort array of n elements. Then

Mark only one oval.

- T(n) <= 2 T(n/4) + cn
- T(n) <= T(n/4) + T(3n/4) + cn
- T(n) <= 2 T(3n/4) + cn
- T(n) <= T(n/3) + T(3n/4) + cn

14. 6. Path Compression algorithm performs in which of the following operations?

Mark only one oval.

- Create operation
- Insert operation
- Find operation
- Delete operation

15. 7. Quick sort is a space-optimized version of ____

Mark only one oval.

- Bubble sort
- Selection sort
- Insertion sort
- Binary tree sort

16. 8. Select the algorithm which does not follow Dynamic Programming

Mark only one oval.

- 0/1 Knapsack Problem
- Matrix Chain Multiplication
- All Pair Shortest Path - Floyd Warshall Algorithm
- Job sequencing with deadline

17. 9. The Euler's circuit problem be solved?

Mark only one oval.

- O(N)
- O(N log N)
- O(log N)
- O(N^2)

18. 10. Which of the following design techniques is used in the merge-sort algorithm?

Mark only one oval.

- Dynamic programming
- Backtracking
- Greedy method
- Divide and conquer

19. 11. Ω - notation provides an asymptotic

Mark only one oval.

- Upper bound
- Lower bound
- One that is sandwiched between the two bounds
- None of these

20. 12. The operation of processing each element in the list is known as

Mark only one oval.

- Sorting
- Merging
- Inserting
- Traversal

21. 13. The Average case occur in linear search algorithm

Mark only one oval.

- When Item is somewhere in the middle of the array
- When Item is not in the array at all
- When Item is the last element in the array
- When Item is the last element in the array or is not there at all

22. 14. The space factor when determining the efficiency of algorithm is measured by

Mark only one oval.

- Counting the maximum memory needed by the algorithm
- Counting the minimum memory needed by the algorithm
- Counting the average memory needed by the algorithm
- Counting the maximum disk space needed by the algorithm

23. 15. The average successful search time taken by binary search on a sorted array of 10 item is

Mark only one oval.

- 2.6
- 2.7
- 2.8
- 2.9

24. 16. What is the time complexity of Z algorithm for pattern searching (m = length of text, n = length of pattern)?

Mark only one oval.

- O(n + m)
- O(m)
- O(n)
- O(m * n)

25. 17. What does Maximum flow problem involve?

Mark only one oval.

- finding a flow between source and sink that is maximum
- finding a flow between source and sink that is minimum
- finding the shortest path between source and sink
- computing a minimum spanning tree

26. 18. Which of the following methods can be used to solve the Knapsack problem?

Mark only one oval.

- Brute force algorithm
- Recursion
- Dynamic programming
- All of the mentioned

27. 19. Which of the following problems should be solved using dynamic programming?

Mark only one oval.

- Merge sort
- Binary search
- Longest common sub sequence
- Quicksort

28. 20. In dynamic programming, the technique of storing the previously calculated values is called

Mark only one oval.

- Saving value property
- Storing value property
- Memorization
- Mapping

29. 21. If a problem can be solved by combining optimal solutions to non-overlapping problems, the strategy is called _____

Mark only one oval.

- Dynamic programming
- Greedy
- Divide and conquer
- Recursion

30. 22. Time complexity of fractional knapsack problem is _____

Mark only one oval.

- O(n log n)
- O(n)
- O(n^2)
- O(nW)

31. 23. Prim's algorithm can be efficiently implemented using _____ for graphs with greater density.

Mark only one oval.

- d-ary heap
- linear search
- Fibonacci heap
- binary search

32. 24. Which of the following is false in the case of a spanning tree of a graph G?

Mark only one oval.

- It is tree that spans G
- It is a sub graph of the G
- It includes every vertex of the G
- It can be either cyclic or acyclic

33. 25. Consider the following statements. S1. Kruskal's algorithm might produce a non-minimal spanning tree. S2. Kruskal's algorithm can efficiently implemented using the disjoint-set data structure.

Mark only one oval.

- S1 is true but S2 is false
- Both S1 and S2 are false
- Both S1 and S2 are true
- S2 is true but S1 is false

34. 26. Disjoint set data structure applicable to find

Mark only one oval.

- Minimum spanning tree
- Minimum shortest path
- Maximum spanning tree
- Maximum path

35. 27. What is the worst-case running time of unions done by size and path compression?

Mark only one oval.

- O(n)
- O(logn)
- O(n logn)
- O(m log n)

36. 28. The tight bound for building a max heap is

Mark only one oval.

- O(n)
- O(log2 n)
- O (n log2 n)
- None of these

37. 29. Which of the following sorting algorithms does not have a worst case running time of O(n^2) ?

Mark only one oval.

- Quick sort
- Merge sort
- Insertion sort
- Bubble sort

38. 30. Kruskal's algorithm is used to _____

Mark only one oval.

- find minimum spanning tree
- find all pair shortest path algorithm
- Both find minimum spanning tree and find all pair shortest path algorithm
- None of these