

DS CLASS TEST (Dec 21)

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Section

4. Enter Section

☐ A☒ B☐ C

5. Which of the following methods is the most effective for picking the pivot element?

☐ first element☒ median-of-three partitioning☐ last element☐ random element

6. which Trees are Generalization of BST and can possess more than 1 key in a node

☐ AVL Trees☒ Btrees☐ Heap Trees☐ Graphs

7. Why "Bubble Sort" is named so?

☐ As it works upon by choosing Pivot element

- ☒ As it make the largest element bubble out at the largest index of sorted subarray and vice versa
- ☐ As it works on Divide and Conquer technique
- ☐ None of the above

8. Minimum number of keys in each internal node in B-Tree Order 5 will be:-

- ☒ 2
- ☐ 3
- ☐ 4
- ☐ 5

9. Quick sort uses

- ☒ join operation
- ☐ merge operation.
- ☐ Join & Merge both operation
- ☐ All of above

10. In the traversal we process all of a vertex's descendants before we move to an adjacent vertex

- ☒ DFS
- ☐ BFS
- ☐ PreOrder
- ☐ Postorder

11. Merge sort uses

- ☐ Backtracking
- ☒ Divide-and-conquer
- ☐ Heuristic approach
- ☐ Greedy approach

12. Running merge sort on an array of size n which is already sorted is

- ☒ $O(n \log n)$
- ☐ $O(n)$
- ☐ $O(n^2)$
- ☐ None

13. A directed graph is if there is a path from each vertex to every other

- ☐ Weakly Connected
- ☒ Strongly Connected
- ☐ Linearly Connected
- ☐ Tightly Connected

14. A graph is a tree if and only if graph is

- ☐ Directed graph
- ☒ Contains no cycles
- ☐ Planar
- ☐ Completely connected

15. Which of the following is not true about the 2-3 tree?

- ☐ all leaves are at the same level
- ☐ it is perfectly balanced
- ☒ postorder traversal yields elements in sorted order
- ☐ it is B-tree of order 3

16. What is a hash function?

- ☐ A function has allocated memory to keys
- ☒ A function that computes the location of the key in the array
- ☐ A function that creates an array
- ☐ A function that computes the location of the values in the array

17. In simple chaining, what data structure is appropriate?

- ☐ Binary trees
- ☐ Singly linked list
- ☒ Doubly linked list
- ☐ Circular linked list

18. Which of the following is not a technique to avoid a collision?

- ☐ Make the hash function appear random

- ☐ Use the chaining method
- ☐ Use uniform hashing
- ☒ Increasing hash table size

19. Graph traversal is different from a tree traversal, because:

- ☐ trees are not connected
- ☐ graphs may have loops
- ☒ trees have root
- ☐ None of these

20. Which of the following ways can be used to represent a graph?

- ☐ Adjacency List and Adjacency Matrix
- ☐ Incidence Matrix
- ☒ Adjacency List, Adjacency Matrix as well as Incidence Matrix
- ☐ No way to represent

21. AVL trees provide better insertion the 2-3 trees.

- ☐ True
- ☒ False

22. A binary tree in which all its levels except the last, have maximum numbers of nodes, and all the nodes in the last level have only one child it will be its left child. Name the tree.

- ☐ Threaded tree
- ☐ Complete binary tree
- ☐ M-way search tree
- ☒ Full binary tree

23. Which of the following is not an advantage of optimised bubble sort over other sorting techniques in case of sorted elements?

- ☐ It is faster
- ☒ Detects whether the input is already sorted
- ☐ Consumes less memory
- ☐ Consumes less time

24. A hash function f defined as $f(\text{key}) = \text{key} \bmod 13$, with linear probing is used to insert keys 55, 58, 68, 91, 27, 145. What will be the location of 79 ?

- ☐ 2
- ☐ 3
- ☐ 4
- ☒ 5

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