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Question No: 1 (Marks: 1) - Please choose one

_____ is a graphical representation of an algorithm

- ▶ Σ notation
- ▶ Θ notation

► **Flowchart** [Click here for detail](#)

► Asymptotic notation

Question No: 2 (Marks: 1) - Please choose one

Which of the following is calculated with **big o notation**?

- Lower bounds
- **Upper bounds** (Page 25)
- Both upper and lower bound
- Medium bounds

Question No: 3 (Marks: 1) - Please choose one

Merge sort makes two recursive calls. Which statement is true after these recursive calls finish, but before the merge step?

- The array elements form a heap
- **Elements in each half of the array are sorted amongst themselves** [click here 4 detail](#)
- Elements in the first half of the array are less than or equal to elements in the second half of the array
- None of the above

Question No: 4 (Marks: 1) - Please choose one

Who invented Quick sort procedure?

- **Hoare** [click here 4 detail](#)
- Sedgewick
- Mellroy
- Coreman

Question No: 5 (Marks: 1) - Please choose one

What is the solution to the recurrence $T(n) = T(n/2) + n$, $T(1) = 1$

- $O(\log n)$
- **$O(n)$** (Page 37)
- $O(n \log n)$
- $O(2n)$

Question No: 6 (Marks: 1) - Please choose one

Consider the following Huffman Tree

The binary code for the string **TEA** is

- **10 00 010** [click here 4 detail](#)
- 011 00 010
- 10 00 110
- 11 10 110

Question No: 7 (Marks: 1) - Please choose one

A greedy algorithm does not work in phases.

- ▶ True
- ▶ **False (Page 97)**

Question No: 8 (Marks: 1) - Please choose one

Can an adjacency matrix for a directed graph ever not be square in shape?

- ▶ Yes
- ▶ **No [click here 4 detail](#)**

Question No: 9 (Marks: 1) - Please choose one

One of the clever aspects of heaps is that they can be stored in arrays without using any_____.

- ▶ **Pointers (Page 40)**
- ▶ constants
- ▶ variables
- ▶ functions

Question No: 10 (Marks: 1) - Please choose one

Merge sort requires extra array storage,

- ▶ **True (Page 54)**
- ▶ False

Question No: 11 (Marks: 1) - Please choose one

Non-optimal or greedy algorithm for money change takes_____

- ▶ **O(k) (Page 99)**
- ▶ O(kN)
- ▶ O(2k)
- ▶ O(N)

Question No: 12 (Marks: 1) - Please choose one

The Huffman codes provide a method of encoding data **inefficiently** when coded using ASCII standard.

- ▶ True
- ▶ **False (Page 99)**

Question No: 13 (Marks: 1) - Please choose one

Using ASCII standard the string abacdaacac will be encoded with _____ bits.

- ▶ **80 (Page 99)**
- ▶ 160
- ▶ 320
- ▶ 100

Question No: 14 (Marks: 1) - Please choose one

Using ASCII standard the string abacdaacac will be encoded with 160 bits.

- ▶ True
- ▶ **False (Page 99)**

Question No: 15 (Marks: 1) - Please choose one

Using ASCII standard the string abacdaacac will be encoded with 320 bits.

- ▶ True
- ▶ **False (Page 99)**

Question No: 16 (Marks: 1) - Please choose one

Using ASCII standard the string abacdaacac will be encoded with 100 bits.

- ▶ True
- ▶ **False (Page 99)**

Question No: 17 (Marks: 1) - Please choose one

Using ASCII standard the string abacdaacac will be encoded with 32 bytes

- ▶ True
- ▶ **False (Page 99)**

Question No: 18 (Marks: 1) - Please choose one

The greedy part of the Huffman encoding algorithm is to first find two nodes with **smallest** frequency.

- ▶ **True (Page 100)**
- ▶ False

Question No: 19 (Marks: 1) - Please choose one

The greedy part of the Huffman encoding algorithm is to first find two nodes with **character** frequency

- ▶ True
- ▶ **False (Page 100)**

Question No: 20 (Marks: 1) - Please choose one

Huffman algorithm uses a greedy approach to generate an **antefix** code T that minimizes the expected length B (T) of the encoded string.

- ▶ True
- ▶ **False (Page 102)**

Question No: 21 (Marks: 1) - Please choose one

Depth first search is shortest path algorithm that works on un-weighted graphs.

- ▶ True
- ▶ **False (Page 153)**

Question No: 22 (Marks: 1) - Please choose one

Dijkstra's single source shortest path algorithm works if all edges weights are non negative and there are no negative cost cycles.

► **True (Page 159)**

► False

Question No: 23 (Marks: 1) - Please choose one

Dijkstra's single source shortest path algorithm works if all edges weights are negative and there are no negative cost cycles.

► True

► **False (Page 159)**

Question No: 24 (Marks: 1) - Please choose one

Floyd-Warshall algorithm is a dynamic programming algorithm; the genius of the algorithm is in the clever recursive formulation of the shortest path problem.

► **True (Page 162)**

► False

Question No: 25 (Marks: 1) - Please choose one

Floyd-Warshall algorithm, as in the case with DP algorithms, we avoid recursive evaluation by generating a table for

► k

► **d_{ij}^k (Page 164)**

► True

► False

Question No: 26 (Marks: 1) - Please choose one

The term coloring came from the original application which was in map drawing.

► **True (Page 176)**

► False

Question No: 27 (Marks: 1) - Please choose one

In the clique cover problem, for two vertices to be in the same group, they must be _____ each other.

► Apart from

► Far from

► Near to

► **Adjacent to (Page 176)**

Question No: 28 (Marks: 1) - Please choose one

Fixed-length codes may not be efficient from the perspective of _____ the total quantity of data.

Select correct option:

► **Minimizing (Page 99)**

- ▶ Averaging
- ▶ Maximizing
- ▶ Summing

Question No: 29 (Marks: 1) - Please choose one

In greedy algorithm, at each phase, you take the_____ you can get right now, without regard for future consequences.

- ▶ Worst
- ▶ Minimum
- ▶ Good
- ▶ **Best** (Page 97)

Question No: 30 (Marks: 1) - Please choose one

The difference between Prim s algorithm and Dijkstra s algorithm is that Dijkstra s algorithm uses a same key.

- ▶ True
- ▶ **False** (Page 156)



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