

Question # 1 of 30 (Start time: 10:09:36 PM, 04 January 2021)

Total Marks: 1

Sorting can be in _____.

Select the correct option



Increasing order only

//



Decreasing order only

//



Both Increasing and Decreasing order

//



Random order

//

Question # 2 of 30 (Start time: 10:10:16 PM, 04 January 2021)

Total Marks: 1

Which one of the following is worst case time complexity of merge sort?

Select the correct option

 $O(n \log n)$

//

 $O(n^2)$

//

 $O((n^2) \log n)$

//

 $O(n \log n^2)$

//

Question # 4 of 30 (Start time: 10:13:41 PM, 04 January 2021)

Total Marks: 1

_____ of reference is an important fact of current processor technology.

Select the correct option



Defining

//



Assigning

//



Formality

//



Locality

//

Question # 5 of 30 (Start time: 10:14:38 PM, 04 January 2021)

Total Marks: 1

Dynamic Programming algorithms often use some kind of _____ to store the results of intermediate sub-problems.

Select the correct option



table

//



variable

//



stack

//



loop

//

Question # 6 of 30 (Start time: 10:15:55 PM, 04 January 2021)

Total Marks: 1

In 2-d maxima problem a point p is said to be dominated by point q if _____.

Select the correct option

 $p.x \leq q.x$

//

 $p.x \leq q.x$ and $p.y \leq q.y$

//

 $p.y \leq q.y$

//

 $p.x \geq q.x$ and $p.y \geq q.y$

//

Question # 7 of 30 (Start time: 10:17:21 PM, 04 January 2021)

Total Marks: 1

If there are $\Theta(n^2)$ entries in edit distance matrix then each entry $E(i, j)$ takes _____ time to compute.

Select the correct option

 $\Theta(n)$

//

 $\Theta(n^2)$

//

 $\Theta(1)$

//

 $\Theta(n \log n)$

//

Question # 8 of 30 (Start time: 10:17:55 PM, 04 January 2021)

Total Marks: 1

If there are $\Theta(n^2)$ entries in edit distance matrix then the total running time is:

Select the correct option

 $\Theta(n)$

//

 $\Theta(1)$

//

 $\Theta(n^2)$

//

 $\Theta(n \log n)$

//

Question # 9 of 30 (Start time: 10:19:05 PM, 04 January 2021)

Total Marks: 1

In Selection problem, the Sieve technique works in _____

Select the correct option



Non-recursive manner

//



Constant time

//



Phases

//



One complete go

//

Question # 10 of 30 (Start time: 10:20:13 PM, 04 January 2021)

Total Marks: 1

Radix sort is a _____ integer sorting algorithm.

Select the correct option



Comparative

//



Non-comparative

//



In-Place

//



Unstable

//

Question # 10 of 30 (Start time: 10:20:13 PM, 04 January 2021)

Total Marks: 1

Radix sort is a _____ integer sorting algorithm.

Select the correct option



Comparative

//



Non-comparative

//



In-Place

//



Unstable

//

Question # 11 of 30 (Start time: 10:21:57 PM, 04 January 2021)

Total Marks: 1

The worst-case running time of Quick sort is ----- in order to sort an array of n element.

Select the correct option

 $O(n \log n)$

//

 $O(n)$

//

 $O(n^2)$

//

 $O(\log n)$

//

Question # 12 of 30 (Start time: 10:23:18 PM, 04 January 2021)

Total Marks: 1

A Principal operation for maintaining the heap property is called heapify, it is also called:

Select the correct option



Sifting Down

//



Sifting Up

//



Sifting Right

//



Sifting Left

//

Question # 13 of 30 (Start time: 10:24:06 PM, 04 January 2021)

Total Marks: 1

Fibonacci Sequence was named on _____, a famous mathematician in 12th Century.

Select the correct option



Fred Brooks

//



Grady Booch

//



Leonardo Pisano

//



Edgar F. Codd

//

Question # 14 of 30 (Start time: 10:25:02 PM, 04 January 2021)

Total Marks: 1

In chain matrix multiplication, the order of the matrices_____.

Select the correct option



can be changed

//



can not be changed

//



is equal

//



is reverse

//

Question # 15 of 30 (Start time: 10:26:53 PM, 04 January 2021)

Total Marks: 1

The main purpose of mathematical analysis is measuring the _____ required by the algorithm.

Select the correct option



Space



Execution time



Inputs & outputs



Execution time and memory

Question # 16 of 30 (Start time: 10:27:24 PM, 04 January 2021)

Total Marks: 1

In Selection problem, the Sieve technique _____

Select the correct option



Adds some more input items each time



Do not work recursively



Do not uses Divide and Conquer approach



Eliminates undesired data items each time

Question # 17 of 30 (Start time: 10:29:03 PM, 04 January 2021)

Total Marks: 1

In plane sweep approach, a vertical line is swept across the 2d-plane and _____structure is used for holding the maximal points lying to the left of the sweep line.

Select the correct option



Array

//



Queue

//



Stack

//



Tree

//

Question # 18 of 30 (Start time: 10:29:55 PM, 04 January 2021)

Total Marks: 1

Random Access Machine (RAM) can execute _____ instructions.

Select the correct option



Only logical

//



Parallel

//



Only arithmetic

//



Logical and arithmetic

//

Question # 19 of 30 (Start time: 10:30:42 PM, 04 January 2021)

Total Marks: 1

In Heap Sort algorithm, to remove the maximum element every time,_____.

Select the correct option



We call Build-Heap procedure

//



Heap Sort algorithm terminates without result

//



We call heapify procedure

//



Nothing happens

//

Question # 20 of 30 (Start time: 10:32:29 PM, 04 January 2021)

Total Marks: 1

If a matrix has three rows and two columns, then dimensions of matrix will be:

Select the correct option



3 x 2



2 x 3



3 x 3



2 x 2

Question # 21 of 30 (Start time: 10:33:22 PM, 04 January 2021)

Total Marks: 1

In the following code the statement "cout<<i;" executes ----- times.

```
for (int i = 1; i<=n ;i++)  
    cout<<i;
```

Select the correct option



n times



n+5 times



Infinite times



Zero times

Question # 22 of 30 (Start time: 10:34:29 PM, 04 January 2021)

Total Marks: 1

Al-Khwarizmi was a/an _____.

Select the correct option



artist

//



mathematician

//



astronomer

//



khalifah

//

Question # 23 of 30 (Start time: 10:34:44 PM, 04 January 2021)

Total Marks: 1

For _____ values of n , any algorithm is fast enough.

Select the correct option

- | | | |
|----------------------------------|----------|----|
| ☒ | Small | // |
| ☐ | Medium | // |
| ☐ | Large | // |
| ☐ | Infinity | // |

Question # 24 of 30 (Start time: 10:35:08 PM, 04 January 2021)

Total Marks: 1

There are _____ entries in the Edit Distance Matrix.

Select the correct option

 $\Theta(n)$

//

 $\Theta(n^2)$

//

 $\Theta(n+2)$

//

 $\Theta(n + 100)$

//

Question # 25 of 30 (Start time: 10:36:38 PM, 04 January 2021)

Total Marks: 1

When a heapify procedure is applied to the root node to restore the heap, then at each level, the comparison performed takes time:

Select the correct option



It will take $\Theta(\log n)$.



It can not be predicted.



It will take $O(1)$.



Time will vary according to the nature of input data.

Question # 26 of 30 (Start time: 10:37:53 PM, 04 January 2021)

Total Marks: 1

In chain matrix multiplication, if there are n items, there are _____ ways in which outer most pair of parentheses can placed.

Select the correct option

 n^2  $2n$  $n+1$  $n-1$

Question # 27 of 30 (Start time: 10:39:14 PM, 04 January 2021)

Total Marks: 1

We do not need to prove comparison-based sorting algorithms by mathematically. It always takes _____ time.

Select the correct option

Big Oh $n \log(n)$

//

Omega $n \log(n)$

//

Omega $n(n^2)$

//

Theta $n \log(n)$

//

Question # 27 of 30 (Start time: 10:39:14 PM, 04 January 2021)

Total Marks: 1

We do not need to prove comparison-based sorting algorithms by mathematically. It always takes _____ time.

Select the correct option

Big Oh $n \log(n)$

//

Omega $n \log(n)$

//

Omega $n(n^2)$

//

Theta $n \log(n)$

//

Question # 28 of 30 (Start time: 10:40:51 PM, 04 January 2021)

Total Marks: 1

In average-case time analysis of quick sort algorithm, the most balanced case for partition is when we divide the list of elements into _____.

Select the correct option



Equal no. of pieces as of input elements

//



Single piece exactly

//



Two nearly equal pieces

//



Three nearly equal pieces

//

$$P(n) = \begin{cases} 1 & \text{if } n = 1, \\ \sum_{k=1}^{n-1} P(k)P(n-k) & \text{if } n \geq 2 \end{cases}$$

This is related to a famous function in combinatorics called the *Catalan numbers*. Catalan numbers are related the number of different binary trees on n nodes. Catalan number is given by the formula:

$$C(n) = \frac{1}{n+1} \binom{2n}{n}$$

In particular, $P(n) = C(n-1)$ $C(n) \in \Omega(4^n/n^{3/2})$ The dominating term is the exponential 4^n thus $P(n)$ will grow large very quickly. So this approach is not practical.

6.4.1 Chain Matrix Multiplication-Dynamic Programming Formulation

The dynamic programming solution involves breaking up the problem into subproblems whose solutions can be combined to solve the global problem. Let $A_{i..j}$ be the result of multiplying matrices i through j . It is easy to see that $A_{i..j}$ is a $p_{i-1} \times p_j$ matrix.

$$\begin{matrix} A_3 & A_4 & A_5 & A_6 = A_{3..6} \\ 4 \times 5 & 5 \times 2 & 2 \times 8 & 8 \times 7 & 4 \times 7 \end{matrix}$$

Question # 29 of 30 (Start time: 10:42:34 PM, 04 January 2021)

Total Marks: 1

In _____ involves breaking up the problem into sub problems whose solutions can be combined to solve the global problem.

Select the correct option



Complexity Theory

//



Dynamic programming solution

//



Divide and Conquer Strategy

//



Greedy Algorithms

//

Question # 30 of 30 (Start time: 10:43:58 PM, 04 January 2021)

Total Marks: 1

Counting sort is suitable for sorting the elements within range 1 to P, where _____

Select the correct option



P is large

//



P is small

//



P is very large

//



P is undetermined

//

Question # 30 of 30 (Start time: 10:43:58 PM, 04 January 2021)

Total Marks: 1

Counting sort is suitable for sorting the elements within range 1 to P, where _____

Select the correct option



P is large

//



P is small

//



P is very large

//



P is undetermined

//