MIDTERM EXAMINATION
Fall 2011
CS502- Fundamentals of Algorithms

Question No: 1 (Marks: 1) - Please choose one
Due to left complete nature of binary tree, the heap can be stored in

1. **Arrays (Page 40)**
2. Structures
3. Link Lis

► Stack

Question No: 1 (Marks: 1) - Please choose one
What type of instructions Random Access Machine (RAM) can execute?

► Algebraic and logic
► Geometric and arithmetic
► **Arithmetic and logic (Page 10)**
► Parallel and recursive

Question No: 1 (Marks: 1) - Please choose one
For Chain Matrix Multiplication we can not use divide and conquer approach because,

► **We do not know the optimum k (Page 86)**
► We use divide and conquer for sorting only ► We can easily perform it in linear time ► Size of data is not given

Question No: 1 (Marks: 1) - Please choose one
What is the total time to heapify?

1. **O(log n) (Page 43)**
2. O(n log n)
3. $O(n^2 \log n)$
4. $O(\log^2 n)$

Question No: 1 (Marks: 1) - Please choose one
word Algorithm comes from the name of the muslim author ____________

► **Abu Ja'far Mohammad ibn Musa al-Khowarizmi**.

Question No: 1 (Marks: 1) - Please choose one al-Khwarizmi's work was written in a book titled _______________

► **al Kitab al-mukhatasar fi hisab al-jabr wa'l-muqabalah**

MIDTERM EXAMINATION
Spring 2010
CS502- Fundamentals of Algorithms

Question No: 1 (Marks: 1) - Please choose one
Random access machine or RAM is a/an

1. Machine build by Al-Khwarizmi
2. Mechanical machine
3. Electronics machine
4. **Mathematical model (Page 10)**

Question No: 2 (Marks: 1) - Please choose one
_______________ is a graphical representation of an algorithm

1. Σ notation
2. Θ notation
3. **Flowchart Click here for detail**
4. Asymptotic notation

Question No: 3 (Marks: 1) - Please choose one
A RAM is an idealized machine with ______________ random-access memory.

1. 256MB
2. 512MB
3. **an infinitely large (Page 10)**
4. 100GB

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

What type of instructions Random Access Machine (RAM) can execute? Choose best answer

1. Algebraic and logic
2. Geometric and arithmetic
3. **Arithmetic and logic (Rep)**
4. Parallel and recursive

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

What will be the total number of max comparisons if we run brute-force maxima algorithm with n elements?

▶ n^2

1. $n^{\frac{n}{2}}$
2. n **(Page 14)**
3. n^8

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

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

1. $O(\log n)$
2. **$O(n)$ (Page 37)**
3. $O(n\log n)$
4. $O(n^2)$

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

Consider the following code:

```
For(j=1; j<n;j++)
        For(k=1; k<15;k++)
                For(l=5; l<n; l++)
                {
                        Do_something_constant();
                }
```

What is the order of execution for this code.

2. **O(n)**
3. O(n^3)
4. O(n^2 log n)
5. O(n^2)

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

What is the total time to heapify?

▶ **O(log n) rep**

2. O(n log n)
3. O(n^2 log n)
4. O($\log^2$ n)

Question No: 9 (Marks: 1) - Please choose one
Consider the following Algorithm:

```
Factorial (n){
  if (n=1)
    return 1
  else
     return (n * Factorial(n-1))
```

Recurrence for the following algorithm is:

3. **T(n) = T(n-1) +1**
4. **T(n) = nT(n-1) +1**
5. **T(n)= T(n-1) +n**
6. **T(n)=T(n(n-1)) +1**

Question No: 10 (Marks: 1) - Please choose one
When we call heapify then at each level the comparison performed takes time

► **It will take Θ (1) (Page 43)**
1. Time will vary according to the nature of input data
2. It can not be predicted
3. It will take Θ (log n)

Question No: 11 (Marks: 1) - Please choose one
In Quick sort, we don't have the control over the sizes of recursive calls

2. **True (Page 40)**
3. False
4. Less information to decide
5. Either true or false

Question No: 12 (Marks: 1) - Please choose one
Is it possible to sort without making comparisons?

3. **Yes (Page 57)**
4. No

Question No: 13 (Marks: 1) - Please choose one
If there are Θ (n^2) entries in edit distance matrix then the total running time is

► Θ (1)
► **Θ (n^2)** **Click here for detail**
1. Θ (n)
2. Θ (n log n)

Question No: 14 (Marks: 1) - Please choose one
For Chain Matrix Multiplication we can not use divide and conquer approach because,

- ► **We do not know the optimum k (Page 86)**
2. We use divide and conquer for sorting only
3. We can easily perform it in linear time
4. Size of data is not given

Question No: 15 (Marks: 1) - Please choose one
The Knapsack problem belongs to the domain of _______________ problems.

- ► **Optimization (Page 91)**
1. NP Complete
2. Linear Solution
3. Sorting

Question No: 16 (Marks: 1) - Please choose one
Suppose we have three items as shown in the following table, and suppose the capacity of the knapsack is 50 i.e. W = 50.

Item	Value	Weight
1	60	10
2	100	20
3	120	30

The optimal solution is to pick

1. Items 1 and 2
2. Items 1 and 3
3. **Items 2 and 3 (correct)**
4. None of these

MIDTERM EXAMINATION
Spring 2010
CS502- Fundamentals of Algorithms

Question No: 1 (Marks: 1) - Please choose one
For the Sieve Technique we take time
► **T(nk) (Page 34)**
► T(n / 3)
► n^2
► n/3

Question No: 1 (Marks: 1) - Please choose one
Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct option:
► **n items (Page 34)**
► phases
► pointers
► constant

Question No: 1 (Marks: 1) - Please choose one
______________ graphical representation of algorithm.
► asymptotic
► **Flowchart (rep)**

Question No: 1 (Marks: 1) - Please choose one
who invented the quick sort

► **C.A.R. Hoare** Click here for detail

Question No: 1 (Marks: 1) - Please choose one
main elements to a divide-and-conquer

► **Divide, conquer, combine (Page 27)**

Question No: 1 (Marks: 1) - Please choose one
Mergesort is a stable algorithm but not an in-place algorithm.

► **True (Page 54)**
► false

Question No: 1 (Marks: 1) - Please choose one
Counting sort the numbers to be sorted are in the range 1 to k where k is small.
► **True (Page 57)**
► False

MIDTERM EXAMINATION
Spring 2007
CS502- Fundamentals of Algorithms

Question No: 1 (Marks: 1) - Please choose one
Total time for heapify is:
► O ($\log^2 n$)
► O (n log n)
► O ($n^2 \log n$)
► **O (log n) Rep**

Question No: 1 (Marks: 1) - Please choose one
If an algorithm has a complexity of $\mathbf{\log_2} \boldsymbol{n} + \mathbf{n\log_2} \boldsymbol{n} + \mathbf{n}$. we could say that it has complexity

► O(n)
► O(n $\log_2$ n)
► O(3)
► O($\log_2$ ($\log_2$ n
)) ► O ($\log_2$ n)

Question No: 1 (Marks: 1) - Please choose one
In RAM model instructions are executed

► **One after another (Page 10)**
► Parallel
► Concurrent
► Random

Question No: 1 (Marks: 1) - Please choose one
In selection algorithm, because we eliminate a constant fraction of the array with each phase, we get the

► **Convergent geometric series (Page 37)**
► Divergent geometric
series ► None of these

Question No: 1 (Marks: 1) - Please choose one
Due to left-complete nature of binary tree, heaps can be stored in

► Link list
► Structure
► **Array (Page 40)**
► None of above

CS609- System Programming
Midterm Quizzes (Quiz No.1 & 2)

Quiz No.1 (04 – MAY - 2013)

Question No: 1 (Marks: 1) - Please choose one
The time assumed for each basic operation to execute on RAM model of computation is-----

Infinite
Continuous
Constant (Page 10)
Variable

Question No: 1 (Marks: 1) - Please choose one
If the indices passed to merge sort algorithm are not equal, the algorithm may return immediately.

True
False (Page 28)

Question No: 1 (Marks: 1) - Please choose one
Brute-force algorithm uses no intelligence in pruning out decisions.

True (Page 18)
False

Question No: 1 (Marks: 1) - Please choose one
In analysis, the Upper Bound means the function grows asymptotically no faster than its largest term.

True (Page 24)
False

Question No: 1 (Marks: 1) - Please choose one
For small values of n, any algorithm is fast enough. Running time does become an issue when n gets large.

True (Page 14)
Fast

Question No: 1 (Marks: 1) - Please choose one
The array to be sorted is not passed as argument to the merge sort algorithm.

True
False

Question No: 1 (Marks: 1) - Please choose one
In simple brute-force algorithm, we give no thought to efficiency.

True (Page 11)
False

Question No: 1 (Marks: 1) - Please choose one
The ancient Roman politicians understood an important principle of good algorithm design that is plan-sweep algorithm.

True
False (Page 27) [Divide and Conquer]

Question No: 1 (Marks: 1) - Please choose one
In 2d-space a point is said to be ________if it is not dominated by any other point in that space.

Member
Minimal
Maximal (Page 11)
Joint

Question No: 1 (Marks: 1) - Please choose one
An algorithm is a mathematical entity that is dependent on a specific programming language. True
(Page 7) False

Question No: 1 (Marks: 1) - Please choose one
The running time of an algorithm would not depend upon the optimization by the compiler but that of an implementation of the algorithm would depend on it.

True (Page 13)
False

Question No: 1 (Marks: 1) - Please choose one
F (n) and g (n) are asymptotically equivalent. This means that they have essentially the same __________ for large n.

Results
Variables
Size
Growth rates (Page 23)

Question No: 1 (Marks: 1) - Please choose one
8n2 + 2n - 3 will eventually exceed c2*(n) no matter how large we make c2.

True (Page 25)
False

Question No: 1 (Marks: 1) - Please choose one
If we associate (x, y) integers pair to cars where x is the speed of the car and y is the negation of the price. High y value for a car means a ________ car.
Fast
Slow
Expensive
Cheap (Page 11)

Question No: 1 (Marks: 1) - Please choose one
The function f(n)= n(logn+1)/2 is asymptotically equivalent to n log n. Here Upper Bound means the function f(n) grows asymptotically ____________ faster than n log n.
More
Quiet
Not (Page 24)
At least

Question No: 1 (Marks: 1) - Please choose one
After sorting in merge sort algorithm, merging process is invoked.
Select correct option:
True (Page 28)
False

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

Asymptotic growth rate of the function is taken over__________ case running time. Select correct option:

- Best
- Average
- **Worst (Page 14)**
- Normal

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

In analysis of f (n) =n (n/5) +n-10 log n, f (n) is asymptotically equivalent to _________.

- n
- 2n
- n+1
- **n2 (Page 23)**

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

Algorithm is concerned with.......issues.

- Macro
- Micro
- **Both Macro & Micro (Page 8)**
- Normal

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

We cannot make any significant improvement in the running time which is better than that of brute-force algorithm.

- True
- **False (Page 18)**

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

In addition to passing in the array itself to Merge Sort algorithm, we will pass in __________other arguments which are indices.

- **Two (Page 28)**
- Three
- Four
- Five

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

Consider the following Algorithm: Fun(n){ if (n=1) return 1 else return (n * Fun(n-1)) } Recurrence for the above algorithm is:

nT(n-1)+1
2T(n-1)+1
T(n-1)+cn
T(n-1)+1

Question No: 1 (Marks: 1) - Please choose one
In analysis, the Lower Bound means the function grows asymptotically at least as fast as its largest term.

True (Page 24)
False

Question No: 1 (Marks: 1) - Please choose one
Efficient algorithm requires less computational…….

Memory
Running Time
Memory and Running Time (Page 9)
Energy

Question No: 1 (Marks: 1) - Please choose one
The O-notation is used to state only the asymptotic ________bounds.

Two
Lower
Upper (Page 25)
Both lower & upper

Question No: 1 (Marks: 1) - Please choose one
For the worst-case running time analysis, the nested loop structure containing one “for” and one “while” loop, might be expressed as a pair of _________nested summations.

1
2 (Page 16)
3
4

Question No: 1 (Marks: 1) - Please choose one
Before sweeping a vertical line in plane sweep approach, in start sorting of the points is done in increasing order of their _______coordinates.

X (Page 18)
Y
Z
X & Y

Question No: 1 (Marks: 1) - Please choose one
Brute-force algorithm for 2D-Maxima is operated by comparing ________ pairs of points.

Two
Some
Most
All (Page 18)

Question No: 1 (Marks: 1) - Please choose one
The function f(n)=n(logn+1)/2 is asymptotically equivalent to nlog n. Here Lower Bound means function f(n) grows asymptotically at ____________ as fast as nlog n.

Normal
Least (Page 23)
Most
All

Question No: 1 (Marks: 1) - Please choose one
The definition of Theta-notation relies on proving ___________asymptotic bound.

One
Lower
Upper
Both lower & upper (Page 25) rep

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

Array
Queue
Stack (Page 18)
Tree

Question No: 1 (Marks: 1) - Please choose one
Algorithm analysts know for sure about efficient solutions for NP-complete problems.
Select correct option:
True
False (Page 9)

Quiz No.1 (2012)

Question No: 1 of 10 (Marks: 1) - Please choose one
The number of nodes in a complete binary tree of height h is

2^(h+1) – 1 (Page 40)
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1

Question No: 1 of 10 (Marks: 1) - Please choose one
The analysis of Selection algorithm shows the total running time is indeed **________**in n,

arithmetic
geometric **linear**
(Page 37)
orthogonal

Question No: 1 of 10 (Marks: 1) - Please choose one
A (an) **_________** is a left-complete binary tree that conforms to the heap order

heap (Page 40)
binary tree binary
search tree array

Question No: 1 of 10 (Marks: 1) - Please choose one
Analysis of Selection algorithm ends up with,

T(n) (Page 37)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

Question No: 1 of 10 (Marks: 1) - Please choose one
For the sieve technique we solve the problem,

recursively (Page 34)
mathematically
precisely
accurately

Question No: 1 of 10 (Marks: 1) - Please choose one
A heap is a left-complete binary tree that conforms to the ___________

increasing order only
decreasing order only
heap order (Page 40)
(log n) order

Question No: 1 of 10 (Marks: 1) - Please choose one
In which order we can sort?

increasing order only
decreasing order only
increasing order or decreasing order (Page 39)
both at the same time

Question No: 1 of 10 (Marks: 1) - Please choose one
Divide-and-conquer as breaking the problem into a small number of

pivot
Sieve
smaller sub problems (Page 34)
Selection

Question No: 1 of 10 (Marks: 1) - Please choose one
For the heap sort we store the tree nodes in

level-order traversal (Page 40)
in-order traversal
pre-order traversal
post-order traversal

Question No: 1 of 10 (Marks: 1) - Please choose one
The sieve technique works in ___________ as follows

Phases (Page 34)
numbers
integers
routines

CS502 - Fundamentals of Algorithms
Quiz No.1 12-11-2012

Question No: 1 of 10 (Marks: 1) - Please choose one
We do sorting to,

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Question No: 1 of 10 (Marks: 1) - Please choose one
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,

left-complete(Page 40)
right-complete
tree nodes
tree leaves

Question No: 1 of 10 (Marks: 1) - Please choose one
Sieve Technique can be applied to selection problem?

True (Page 35)
False

Question No: 1 of 10 (Marks: 1) - Please choose one
In Sieve Technique we do not know which item is of interest

True (Page 34)
False

Question No: 1 of 10 (Marks: 1) - Please choose one
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

linear
arithmetic
geometric (Page 37)
exponent

Question No: 1 of 10 (Marks: 1) - Please choose one
For the heap sort, access to nodes involves simple _______________ operations.

arithmetic (Page 41)
binary
algebraic
logarithmic

Question No: 1 of 10 (Marks: 1) - Please choose one
Slow sorting algorithms run in,

T(n^2) (Page 39)
T(n)
T(log n)

Question No: 1 of 10 (Marks: 1) - Please choose one
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
T(n)
T(n / 2)
log n (Page 37)
n / 2 + n / 4

Question No: 1 of 10 (Marks: 1) - Please choose one
The sieve technique is a special case, where the number of sub problems is just
5
many
1 (Page 34)
few

Question No: 1 of 10 (Marks: 1) - Please choose one
How many elements do we eliminate in each time for the Analysis of Selection algorithm?

(n / 2)+n elements
(n / 2) elements (Page 37)
n / 4 elements
2 n elements

Question No: 1 of 10 (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: 1 of 10 (Marks: 1) - Please choose one
How much time merge sort takes for an array of numbers?

T(n^2)
T(n)
T(log n)
T(n log n) (Page 40)

Question No: 1 of 10 (Marks: 1) - Please choose one
The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
divide-and-conquer (Page 34)
decrease and conquer
greedy nature 2-
dimension Maxima

Question No: 1 of 10 (Marks: 1) - Please choose one
In Sieve Technique we do not know which item is of interest
True (Page 34) rep
False

Question No: 1 of 10 (Marks: 1) - Please choose one
Theta asymptotic notation for T (n) :

Set of functions described by: c1g(n)Set of functions described by c1g(n)>=f(n) for c1 s
Theta for T(n)is actually upper and worst case comp (Not sure)
Set of functions described by:
c1g(n)

Question No: 1 of 10 (Marks: 1) - Please choose one
Memoization is?

To store previous results for future use
To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later (page 74)
To make the process accurate
None of the above

Question No: 1 of 10 (Marks: 1) - Please choose one
Which sorting algorithm is faster
O (n log n) Page 26
O n^2
O (n+k)
O n^3

Question No: 1 of 10 (Marks: 1) - Please choose one
Quick sort is

Stable & in place
Not stable but in place (Page 54)
Stable but not in place
Some time stable & some times in place

Question No: 1 of 10 (Marks: 1) - Please choose one
One example of in place but not stable algorithm is

Merger Sort
Quick Sort (Page 54)
Continuation Sort
Bubble Sort

Question No: 1 of 10 (Marks: 1) - Please choose one
Cont sort is suitable to sort the elements in range 1 to k
K is Large
K is not known
K may be small or large
K is small (Page 57)

Question No: 1 of 10 (Marks: 1) - Please choose one
In place stable sorting algorithm.

If duplicate elements remain in the same relative position after sorting (Page 54)
One array is used
More than one arrays are required
Duplicating elements not handled

Question No: 1 of 10 (Marks: 1) - Please choose one
Which may be a stable sort?
Merger
Insertion (Page 54)
Both above
None of the above

Question No: 1 of 10 (Marks: 1) - Please choose one
An in place sorting algorithm is one that uses ___ arrays for storage

Two dimensional arrays
More than one array
No Additional Array (Page 54)
None of the above

Question No: 1 of 10 (Marks: 1) - Please choose one
Sieve Technique applies to problems where we are interested in finding a single item from a larger set of ______________

n items (Page 34)
phases
pointers
constant

Question No: 1 of 10 (Marks: 1) - Please choose one
Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,

upper
lower (Page 39)
average
log n

Question No: 1 of 10 (Marks: 1) - Please choose one
Counting sort has time complexity:

O(n) (Page 58)
O(n+k)
O(k)
O(nlogn)

Question No: 1 of 10 (Marks: 1) - Please choose one
The running time of quick sort depends heavily on the selection of

No of inputs
Arrangement of elements in array
Size o elements
Pivot elements (Page 49)

Question No: 1 of 10 (Marks: 1) - Please choose one
Which may be stable sort:

Bubble sort
Insertion sort
Both of above (Page 54)

Question No: 1 of 10 (Marks: 1) - Please choose one
One Example of in place but not stable sort is

Quick (Page 54)
Heap
Merge
Bubble

Question No: 1 of 10 (Marks: 1) - Please choose one
In Quick Sort Constants hidden in T(n log n) are

Large
Medium
Small Click here for detail
Not Known

Question No: 1 of 10 (Marks: 1) - Please choose one
Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:

There is explicit combine process as well to conquer the solution.
No work is needed to combine the sub-arrays, the array is already sorted
Merging the sub arrays
None of above. (Page 51)
Ref: - random choices for the pivot element and each choice have an equal probability of 1/n of occurring. So we can modify the above recurrence to compute an average rather than a max

CS501 - Quiz No.2 (Spring 2013)

Question No: 1 of 10 (Marks: 1) - Please choose one
A point p in 2-dimensional space is usually given by its integer coordinate(s)____________

p.x only
p.y only
p.x & p.z
p.x & p.y (Page 10)

Question No: 1 of 10 (Marks: 1) - Please choose one
In ____________ we have to find rank of an element from given input.

Merge sort algorithm
Selection problem (Page 34)
Brute force technique
Plane Sweep algorithm

Question No: 1 of 10 (Marks: 1) - Please choose one
In Heap Sort algorithm, if heap property is violated _________

We call Build heap procedure
We call Heapify procedure
We ignore
Heap property can never be violated

Question No: 1 of 10 (Marks: 1) - Please choose one
Upper bound requires that there exist positive constants c2 and n0 such that f(n) ____ c2n for all n <= n0(ye question ghalat lag raha hai mujhae

Less than
Equal to or Less than (Page 25)
Equal or Greater than
Greater than

Question No: 1 of 10 (Marks: 1) - Please choose one
A RAM is an idealized algorithm with takes an infinitely large random-access memory.

True
False (Page 10)

Question No: 1 of 10 (Marks: 1) - Please choose one
__________ is one of the few problems, where provable lower bounds exist on how fast we can sort.

Searching
Sorting (Page)
Both Searching & Sorting
Graphing

Question No: 1 of 10 (Marks: 1) - Please choose one
Floor and ceiling are _____________ to calculate while analyzing algorithms.

Very easy
Usually considered difficult (Page 31)

Question No: 1 of 10 (Marks: 1) - Please choose one
In Heap Sort algorithm, the maximum levels an element can move upward is __________

Theta (log n) (Page 43)
Order (log n)
Omega (log n)
O (1) i.e. Constant time

Question No: 1 of 10 (Marks: 1) - Please choose one
A point p in 2-dimensional space is usually given by its integer coordinate(s)_____________

p.x only p.y
only p.x & p.z
p.x & p.y (Page 17)

Question No: 1 of 10 (Marks: 1) - Please choose one
In Heap Sort algorithm, the total running time for Heapify procedure is _____________

Theta (log n) (Page 43)
Order (log n)
Omega (log n)
O (1) i.e. Constant time

Question No: 1 of 10 (Marks: 1) - Please choose one
Algorithm is a mathematical entity, which is independent of a specific machine and operating system.

True
(Page 7) False

Question No: 1 of 10 (Marks: 1) - Please choose one
While Sorting, the ordered domain means for any two input elements x and y _________ satisfies only.

x < y
x > y
x = y
All of the above (Page 39)

Question No: 1 of 10 (Marks: 1) - Please choose one
Quick sort is best from the perspective of Locality of reference.

True (Page 9)
False

Question No: 1 of 10 (Marks: 1) - Please choose one
Sorting can be in _________

Increasing order only
Decreasing order only
Both Increasing and Decreasing order (Page 39)
Random order

Question No: 1 of 10 (Marks: 1) - Please choose one
In Heap Sort algorithm, we build _______ for ascending sort.

Max heap (Page 41)
Min heap

Question No: 1 of 10 (Marks: 1) - Please choose one
In Sieve Technique, we know the item of interest.

True
False (Page 34)

Question No: 1 of 10 (Marks: 1) - Please choose one
While solving Selection problem, in Sieve technique we partition input data __________

In increasing order
In decreasing order
According to Pivot (Page 35)
Randomly

Question No: 1 of 10 (Marks: 1) - Please choose one
In pseudo code, the level of details depends on intended audience of the algorithm.

True (Page 12)
False

Question No: 1 of 10 (Marks: 1) - Please choose one
The sieve technique works where we have to find _________ item(s) from a large input.

Single (Page 34)
Two
Three
Similar

Question No: 1 of 10 (Marks: 1) - Please choose one
If the indices passed to merge sort algorithm are ________,then this means that there is only one element to sort.

Small
Large
Equal (Page 28)
Not Equal

(Marks: 1) - Please choose one
1.Random access machine or RAM is a/an
Machines build by Al-Khwarizmi
Mechanical machine
Electronics machine
Mathematical model (lec#2 pg#10)

2._______________ is a graphical representation of an algorithm
Σ notation
Θ notation
Flowchart(refrence cls10 chapter no1)
Asymptotic notation

3. A RAM is an idealized machine with ______________ random-access memory.
256MB
512MB
an infinitely large (page#10)
100GB

4.**What type of instructions Random Access Machine (RAM) can execute? Choose best**
Algebraic and logic
Geometric and arithmetic
Arithmetic and logic(page#10)
Parallel and recursive

5.What will be the total number of max comparisons if we run brute-force maxima algorithm with n elements.
$*n^2$

$*n^{\frac{n}{2}}$

$*n$

$*n^8$

Answe is option 3

6. What is the solution to the recurrence T(n) = T(n/2)+n.

O(logn) (not sure)

O(n)

O(nlogn)

O(n^2)

7. Consider the following code:

```
For(j=1; j<n;j++)
For(k=1; k<15;k++)
For(l=5; l<n; l++)
{
Do_something_constant();
}
```

What is the order of execution for this code.

O(n)

O(n^3)

O(n^2 log

n) O(n^2)

8. Consider the following Algorithm:

```
Factorial (n){
if   (n=1)
return 1
else
return (n * Factorial(n-1))
```

Recurrence for the following algorithm is:

T(n) = T(n-1) +1

T(n) = nT(n-1) +1

T(n)= T(n-1) +n

T(n)=T(n(n-1)) +1 (lec#9)

9. What is the total time to heapify?

(Olog n) (page#43)

(n log n) (

n^2 log n) (

$\log^2$ n)

10.When we call heapify then at each level the comparison performed takes time

It will take (1)

Time will vary according to the nature of input

data It can not be predicted

It will take (log n)

11.In Quick sort, we don't have the control over the sizes of recursive calls

True(page#49)

False

Less information to decide

Either true or false

12.Is it possible to sort without making comparisons? **Yes (pge#57)**
No
Question No: 13 (Marks: 1) - Please choose one
If there are n^2 entries in edit distance matrix then the total running
(1)
(n^2) (pg#84)
(n)
(n log n)

14. For Chain Matrix Multiplication we can not use divide and conquer approach because, **We do not know the optimum k (pg#86)**
We use divide and conquer for sorting only
We can easily perform it in linear time
Size of data is not given

15.The Knapsack problem belongs to the domain of _______________ problems.
Optimization (pg#91)
NP Complete
Linear Solution
Sorting

16.Suppose we have three items as shown in the following table, and suppose the capacity of the knapsack is 50 i.e. W = 50.
The optimal solution is to pick

item	value	weight
1	60	10
2	100	20
3	120	30

Items 1 and 2
Items 1 and 3
Items 2 and 3
None of these

17 - What type of instructions Random Access Machine (RAM) can execute? Choose best answer
4. Algebraic and logic
5. Geometric and arithmetic
3. **Arithmetic and logic (rep)**
4. Parallel and recursive
Correct Choice : 3 From Lectuer # 1

18 - Random access machine or RAM is a/an
5. Machine build by Al-Khwarizmi
6. Mechanical machine
7. Electronics machine

4. **Mathematical model** **(rep)**
Correct Choice : 4 From Lectuer # 1

19- _______________ is a graphical representation of an algorithm
5. Segma Notation
6. Thita Notation
3. **Flowchart** **(rep)**
4. Asymptotic notation
Correct Choice : 3 From Lectuer # 2

20 - What will be the total number of max comparisons if we run brute-force maxima?
algorithm with n elements?
5. n^2
6. n^n/2
7. n
8. n^8
Correct Choice : 1 From Lectuer # 3

21 - function is given like 4n^4+ 5n^3+n what is the run time of this
5. **theata(n^4)**
6. theata(n^3)
7. theata(4n^4+ 5n^3)
8. theata(4n^4+ 5n^3)
Correct Choice : 1 From Lectuer # 4

22 - Let us say we have an algorithm that carries out N2 operations for an input of size N.
Let us say that a computer takes 1 microsecond (1/1000000 second) to carry out one operation. How long does the algorithm run for an input of size 3000?
5. 90 seconds
6. 9 seconds
7. 0.9 seconds
8. 0.09 seconds
Correct Choice : 2 From Lectuer # 4

23 - The appropriate big θ classification of the given function. f(n) = 4n2 + 97n + 1000 is
4. ?(n)
5. O(2^n)
6. **O(n^2)**
7. O(n^2logn)
Correct Choice : 3 From Lectuer # 4

24 - Which sorting algorithm is faster
5. O (n log n)
6. O n^2
7. O (n) (pg#26)
8. O n^3
Correct Choice : 3 From Lectuer # 5

25 - If algorithm A has running time 7n^2 + 2n + 3 and algorithm B has running time 2n^2, then
1**. Both have same asymptotic time complexity**
6. A is asymptotically greater
7. B is asymptotically greater
8. None of others
Correct Choice : 1 From Lectuer # 6

26 - What is the solution to the recurrence T(n) = T(n/2)+n .
1**. O(logn)**
5. O(n)
6. O(nlogn)
7. O(n^2)
Correct Choice : 1 From Lectuer # 8

27- - How much time merge sort takes for an array of numbers?
1. (n^2)
2**. T(n)**
7. T(log n)
8. T(n log n)
Correct Choice : 2 From Lectuer # 8

28 - Consider the following Algorithm:
Factorial (n){
if (n=1)
return 1
else
return (n * Factorial(n-1))
}
Recurrence for the following algorithm is:
4. T(n) = T(n-1) +1
5. T(n) = nT(n-1) +1
6. T(n)= T(n-1) +n
7. **T(n)=T(n(n-1)) +1**
Correct Choice : 4 From Lectuer # 9

29 - For the Sieve Technique we take time
1. **T(nk) .** **(pg#34)**
6. T(n / 3)
7. n^2
8. n/3
Correct Choice: 1 From Lectuer # 10

30 - Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
1**. n items** **(pg#34)**
2. phases

5. pointers
6. constant
Correct Choice : 1 From Lectuer # 10

31 - In Sieve Technique we do not know which item is of interest
3. FALSE
4. TRUE(pg#34)
Correct Choice : 2 From Lectuer # 10

32 - For the sieve technique we solve the problem,
1**. recursively (pg#34)**
5. mathematically
6. accurately
7. precisely
Correct Choice : 1 From Lectuer # 10

33 - For the Sieve Technique we take time
4. **Tθ(nk) (pg#34)**
5. T(n / 3)
6. n^2
7. n/3
Correct Choice : 1 From Lectuer # 10

34 - How many elements do we eliminate in each time for the Analysis of Selection algorithm?
5. n / 2 elements
6. (n / 2) + n elements
7. n / 4 elements
8. n elements
Correct Choice : 4 From Lectuer # 10

35- Sieve Technique applies to problems where we are interested in finding a single item from a larger set of **_____________**
1**. n items**
2. phases
3. pointers
4. constant
Correct Choice : 1 From Lectuer # 10

36 - The analysis of Selection algorithm shows the total running time is indeed **________**in n,
1. arithmetic
2. geometric
3. linear (pg#37)
4. orthogonal
Correct Choice : 3 From Lectuer # 10

37- The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
1. **divide-and-conquer (pg#34)**
2. decrease and conquer
3. greedy nature
4. 2-dimension Maxima
Correct Choice : 1 From Lectuer # 10

38 - The sieve technique works in ___________ as follows
1**. phases (pg#34)**
2. numbers
3. integers
4. routines
Correct Choice : 1 From Lectuer # 10

39 - A (an) _________ is a left-complete binary tree that conforms to the heap order
1. **heap (pg#40)**
2. binary tree
3. binary search tree
. array
Correct Choice : 1 From Lectuer # 11

40 - For the heap sort, access to nodes involves simple _______________ operations.
1. **arithmetic (pg#41)**
2. binary
3. algebraic
4. logarithmic
Correct Choice : 1 From Lectuer # 11

41 - We do sorting to,

1. keep elements in random positions
2. keep the algorithm run in linear order
3. keep the algorithm run in (log n) order
4. keep elements in increasing or decreasing order (pg#39)
Correct Choice : 1 From Lectuer # 11

42 - For the heap sort we store the tree nodes in
1**. level-order traversal (pg#40)**
2. in-order traversal
3. pre-order traversal
4. post-order traversal
Correct Choice : 1 From Lectuer # 11

43 - In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
1. T(n)
2. T(n / 2)

3. **log n** **(pg#37)**
4. n / 2 + n / 4

Correct Choice : 3 From Lectuer # 11

44 - In which order we can sort?
1. increasing order only
2. decreasing order only
3. **increasing order or decreasing order** **(pg#39)**
4. both at the same time

Correct Choice : 3 From Lectuer # 11

46 - One of the clever aspects of heaps is that they can be stored in arrays without using any ________________.
1. **pointers** **(pg#40)**
2. constants
3. variables
4. functions

Correct Choice : 1 From Lectuer # 1

47 - Slow sorting algorithms run in,
1. **O(n^2)** **(pg#39)**
2. O(n)
3. O(log n)
4. O(n log n)

48- What is the total time to heapify?
1. ?(**log n) (pg#43)**
2. ?(n log n)
3. ?(n^2 log n)
4. ?(log^2n)

Correct Choice : 1 From Lectuer # 12

49 - When we call heapify then at each level the comparison performed takes time It will take O (1)
1. Time will vary according to the nature of input data
2. It can not be predicted
3. **It will take O (log n)**
4. None of the Given

Correct Choice : 3 From Lecture # 12

50 - After partitioning array in Quick sort, pivot is placed in a position such that
1. **Values smaller than pivot are on left and larger than pivot are on right (**
2. Values larger than pivot are on left and smaller than pivot are on right
3. Pivot is the first element of array
4. Pivot is the last element of array

Correct Choice : 2 From Lectuer # 13

51 - The running time of quick sort depends heavily on the selection of
1. No of inputs

2. Arrangement of elements in array
3. Size o elements
4. **Pivot element** **(pg#49)**
Correct Choice : 4 From Lectuer # 13

52- In Quick Sort Constants hidden in T(n log n) are
1. Large
2. Medium
3. **Small**
4. Not Known
Correct Choice : 3 From Lectuer # 14

53 - Is it possible to sort without making comparisons?
1. Yes (pg#57)
2. No
Correct Choice : 1 From Lectuer # 15

54 - Merge sort is stable sort, but not an in-place algorithm
1. **TRUE (pg#54)**
2. FALSE
Correct Choice : 1 From Lectuer # 15

55 - In counting sort, once we know the ranks, we simply **_________** numbers to their final positions in an output array.
1Delete
2 **copy**
3 Mark
4 arrange
Correct Choice : 2 From Lectuer # 15

1.
56 - An in place sorting algorithm is one that uses ___ arrays for storage
1. Two dimensional arrays
2. More than one array
3.**No Additional Array** **(pg#54)**
4.None of the above
Correct Choice : 3 From Lectuer # 15

2.
57 - Continuation/counting sort is suitable to sort the elements in range 1 to k
1. K is Large
2. K is not known
3. K may be small or large
4. **K is small (pg#57)**
Correct Choice : 4 From Lectuer # 15

3.
58 - In stable sorting algorithm.
1. **If duplicate elements remain in the same relative position after sorting**
2. One array is used
3. More than one arrays are required

4. Duplicating elements not handled
Correct Choice : 1 From Lectuer # 15
4.
59 - One example of in place but not stable algorithm is
1. Merger Sort
2. Quick Sort
3. Continuation Sort
4. Bubble Sort
Correct Choice : 2 From Lecture # 15
5.
60 - One example of in place but not stable algorithm is
1. Merger Sort
2**. Quick Sort (pg#54)**
3. Continuation Sort
4. Bubble Sort
Correct Choice : 2 From Lecture # 15

61- One of the clever aspects of heaps is that they can be stored in arrays without using any ________________.
1. **pointers (rep)**
2. constants
3. variables
. functions
Correct Choice : 1 From Lecture # 15

62 - Quick sort is

1. Stable & in place
2. **Not stable but in place (pg#54)**
3. Stable but not in place
4. Some time stable & some times in place

63 - Quick sort is
1. Stable & in place
2. **Not stable but in place (rep)**
3. Stable but not in place
4. Some time stable & some times in place
Correct Choice : 2 From Lectuer # 15

64 - Which may be a stable sort?
1. Merger
2. Insertion
3.**Both above (pg#54)**
4.None of the above
Correct Choice : 3 From Lectuer # 15

67 - Which of the following sorting algorithms is stable?
(i) **Merge sort,**
(ii) Quick sort,

(iii) Heap sort,
(iv) Counting Sort.
1. Only i
2. Only ii
3. Both i and ii
4. Both iii and iv
Correct Choice : 1 From Lectuer # 15

68 Mergesort is a stable algorithm but not an in-place algorithm.
1. TRUE (pg#54)
2. FALSE
Correct Choice : 1 From Lectuer # 16

69 - Memorization is?
1. To store previous results for future use
2. **To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later (pg#74)**
3. To make the process accurate
4. None of the above
Correct Choice : 2 From Lectuer # 16

70 - Dynamic programming algorithms need to store the results of intermediate sub-problems.
1. TRUE (pg#75)
2. FALSE
Correct Choice : 1 From Lectuer # 17

71 - Dynamic programming uses a top-down approach.
1. TRUE
2. **FALSE**
Correct Choice : 2 From Lectuer # 17

73- The edit distance between FOOD and MONEY is
1. **At most four (pg#76)**
2. At least four
3. Exact four
4. Wrong
Correct Choice : 1 From Lectuer # 17

74- The edit distance between FOOD and MONEY is
1. **At most four**
2. At least four
3. Exact four
4. Wrong
Correct Choice : 1 From Lectuer # 17

75 - If there are O (n^2) entries in edit distance matrix then the total running time is
1. O (1)

2. **O (n^2) (rep)**
3. O (n)
4. O (n log n)
Correct Choice : 2 From Lectuer # 18

76 - A p x q matrix A can be multiplied with a q x r matrix B. The result will be a p x r matrix C. There are (p . r) total entries in C and each takes _________ to compute.
1**. O (q)   (pg#84)**
2. O (1)
3. O (n^2)
4. O (n^3)
Correct Choice : 1 From Lectuer # 19

77 - For Chain Matrix Multiplication we can not use divide and conquer approach because,
1. **We do not know the optimum k (rep)**
2. We use divide and conquer for sorting only
3. We can easily perform it in linear time
4. Size of data is not given
Correct Choice : 1 From Lectuer # 19

78 - A p x q matrix A can be multiplied with a q x r matrix B. The result will be a p x r matrix C. There are (p . r) total entries in C and each takes _________ to compute.
1. O (q) (rep)
2. O (1)
3. O (n^2)
4. O (n^3)
Correct Choice : 1 From Lectuer # 19

79 - The Knapsack problem belongs to the domain of _______________ problems.
1**. Optimization rep**
2. NP Complete
3. Linear Solution
4. Sorting
Correct Choice : 1 From Lectuer # 21

80 The codeword assigned to characters by the Huffman algorithm have the property that no codeword is the postfix of any other.
1. TRUE
2. **FALSE**
Correct Choice : 2 From Lectuer # 22

81 - The greedy part of the Huffman encoding algorithm is to first find two nodes with larger frequency.
1. TRUE
2. FALSE
Correct Choice : 2 From Lectuer # 22

82 - An optimization problem is one in which you want to find,
1. Not a solution
2. An algorithm
3. Good solution
4. **The best solution**

Correct Choice : 4 From Lectuer # 22

83- We do sorting to,

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order (rep)

84-Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,

left-complete
right-complete
tree nodes tree
leaves

85- Sieve Technique can be applied to selection problem?
True (pg#35)
False

86-A heap is a left-complete binary tree that conforms to the ___________

increasing order only
decreasing order only
heap order (pg40)
(log n) order

87- A (an) _________ is a left-complete binary tree that conforms to the heap order
heap (pg#40)
binary tree binary
search tree array

88- Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems (pg27)
Selection

89- In Sieve Technique we do not know which item is of
interest Select correct option:

True (rep)
False

90- The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:

16
10
32
31 (not sure)

91- In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:

linear
arithmetic
geometric (pg37)
exponen**t**

92- In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:

linear arithmetic
geometric **(rep)**
exponent

93-In inplace sorting algorithm is one that uses array for storage :

1. An additional array
2. **No additional array (rep)**
3. Both of the above
4. More then one array of one dimension.

94-**The running time of quick sort depends heavily on the selection of.**

1. No of inputs
2. Arrangement of element in array
3. Size Of element
4. **Pivot element rep**

95-For the sieve technique we solve the problem.

Recursively rep
mathematically
precisely
accurately

96-**The sieve technique works in ___________ as follows**
Phases rep

numbers
integers
routines

97-Slow sorting algorithms run in,
T(n^2) rep
T(n)
T(log n)

98-**A (an) _________ is a left-complete binary tree that conforms to the heap order**

Heap rep binary
tree binary search
tree array

99-In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
linear
arithmetic
geometric rep
exponent

100-In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as
T(n)
T(n / 2)
log n (pg#37)
n / 2 + n / 4

101-In which order we can sort?
Select correct option:
increasing order only
decreasing order only
increasing order or decreasing order (rep)
both at the same time

102-The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
16
10
32
31

103-Analysis of Selection algorithm ends up with,
θ(n) rep
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

104-Memorization is?

1. To store previous results for future use

2. To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later (rep)

3. To make the process accurate
4. None of the above

105-Which sorting algorithm is faster

1. O (n log n)
2. O n^2
3. **O (n) rep**
4. O n^3

106-Quick sort is

1. Stable & in place
2. **Not stable but in place (rep)**
3. Stable but not in place
4. Some time stable & some times in place

107-One example of in place but not stable algorithm is

1. Merger Sort
2. **Quick Sort rep**
3. Continuation Sort
4. Bubble Sort

108-In Quick Sort Constants hidden in T(n log n) are

1. Large
2. Medium
3. **Small rep**
4. Not Known

109-Counting sort is suitable to sort the elements in range 1 to k

1. K is Large
2. K is not known
3. K may be small or large
4. **K is small rep**

110-In stable sorting algorithm.

1. **If duplicate elements remain in the same relative position after sorting rep**
2. One array is used
3. More than one arrays are required
4. Duplicating elements not handled

111-Which may be a stable sort?

1. Merger
2. Insertion
3. **Both above rep**
4. **None** of the above

112-An in place sorting algorithm is one that uses ___ arrays for storage
1. Two dimensional arrays
2. More than one array
3.No Additional Array **rep**
4.None of the above

113-Counting sort has time complexity of ?
1. O(n)
2. O(n+k)
3. O(nlogn)
4. O(k)

114-We do sorting to,
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order **rep**

115-Divide-and-conquer as breaking the problem into a small number of
pivot
Sieve
smaller sub problems rep
Selection

116-The analysis of Selection algorithm shows the total running time is indeed ________in n,
arithmetic
geometric
linear **pg#37**
orthogonal

117-How many elements do we eliminate in each time for the Analysis of Selection algorithm?
n / 2 elements **(pg#37)**
(n / 2) + n elements
n / 4 elements
2 n elements

118-Sieve Technique can be applied to selection problem?
True **rep**
FALSE

119- For the heap sort we store the tree nodes in
level-order traversal rep
in-order traversal
pre-order traversal
post-order traverse

120-In RAM model instructions are executed

One after another pg#10
Parallel
Concurrent
Random

121-In selection algorithm, becausewe eliminate a constant fraction of the array with each phase, we get the

Convergent geometric series rep
Divergent geometric series None
of these

122-Due to left-complete nature of binary tree, heaps can be stored in

Link list
Structure
Array
None of above

123-If algorithm A has running time 7n2 + 2n + 3 and algorithm B has running time 2n2, then

Both have same asymptotic time complexity rep A is
asymptotically greater
B is asymptotically greater
None of others

124-Which of the following sorting algorithms is stable?
(i) Merge sort,
(ii) Quick sort,
(iii) Heap sort,
(iv) Counting Sort.
Only i
Only ii
Both i and ii
Both iii and iv

125-Execution of the following code fragment
```
int Idx;
for (Idx = 0; Idx < N; Idx++)
{
cout << A[Idx] << endl;
}
```
is best described as being
O(N)
O(N2)
O(log N)
O(N log N)

126-The edit distance between FOOD and MONEY is
At most four rep
At least four

Exact four

127-Consider the following recurrence relation

[redacted]

Then T(5) is
25 75 79

128-How much time merger sort takes for an array of numbers?
T(n^2)
T(n) (pg#29)
T(log n)
T(n log n)

129-Divide-and-Conquer is as breaking the problem into a small number of
Smaller Sub Problems **rep**
Pivot
Sieve
Solutions.

130-The Sieve Sequence is a special case where the number of smaller subproblems is just____. 4
Many
1
Few

131-How many elements do we eliminate each time for the Analysis of Selection Algorithm?
(n / 2)+n Elements
n / 2 Elements
n / 4 Elements
2 n Elements
132-We do sorting to?
Keep elements in random position
Keep the algorithm run in linear order
Keep Elements in Ascending or Descending Order rep Keep
the algorithm run in (log n) order

133-Sorting is one of the few problems where provable ____ bounds exit on how fast we can sort?
Upper
Average
Log n
Lower **rep**

134-In the analysis of Selction Algorithm, we eliminate the constant fraction of the array with each phase, we get convergent _____ series in the analysis.

Geometric rep
Linear
Arithmetic
None of above

135-For the Sieve technique we take time?
T (n/3)
T (n k)
N^2
n/3

136-For the sieve technique we solve the problem
Recursively
Randomly
Mathematically
Precisely

137-The recurrence relation of Tower of Hanoi is T(n) = 1 if n = 1 and 2T(n-1) if n >1. In order to move a tower of 5 rings from one peg to another how many ring moves are required?
16
10
32 (Not Confirm)
31

138-An optimization problem is one in which you want to find,
► Not a solution
► An algorithm
► Good solution
► **The best solution rep**

139-Search technique is used to find the
► Maximum two solutions
► Minimum two solutions
► **Sorting solution**

140-What type of instructions Random access machine can execute?
Geometric and arithmetic
Algebraic and logic
Arithmetic and logic rep
Parallel and recursive

141-Due to left complete nature of binary tree, the heap can be stored in
- **Arrays** **rep**
- Structures
- Link Lis
- Stack

142-What type of instructions Random Access Machine (RAM) can execute?

Algebraic and logic
Geometric and arithmetic
Arithmetic and logic rep
Parallel and recursive

143-For Chain Matrix Multiplication we can not use divide and conquer approach because,

We do not know the optimum k
We use divide and conquer for sorting only rep
We can easily perform it in linear time
Size of data is not given

144-We do sorting to,

Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order **rep**

145-Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,

left-complete **Page 40**
right-complete
tree nodes
tree leaves

146-Sieve Technique can be applied to selection problem?

True **Page 35**
False

147-A heap is a left-complete binary tree that conforms to the___________

increasing order only
decreasing order only
heap order **Page 40**
(log n) order

148-A (an) _________ is a left-complete binary tree that conforms to the heap order

Heap **Page 40**
binary tree
binary search tree
array

149-Divide-and-conquer as breaking the problem into a small number of

pivot
Sieve

smaller sub problems **Page 34**
Selection

150-In Sieve Technique we do not know which item is of interest
True **Page 34**
False

151-The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
16
10
32
31

152-In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
linear
arithmetic
geometric **Page 37**
exponent

153-For the heap sort, access to nodes involves simple _______________operations.:
Arithmetic **Page 41**
binary
algebraic
logarithmic

154-For the sieve technique we solve the problem,
Recursively **Page 34**
mathematically
precisely
accurately

155-The sieve technique works in ___________ as follows
Phases **Page 34**
numbers
integers
routines

156-Slow sorting algorithms run in,
~~O~~(n^2) **Page 39**
T(n^2)
T(n)
T(log n)

157-A (an) _________ is a left-complete binary tree that conforms to the heap order
Heap
binary tree binary
search tree array

158-In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

linear
arithmetic
geometric
exponent

159-In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

T(n)
T(n / 2)
log n **Page 37**
n / 2 + n / 4

160- The sieve technique is a special case, where the number of sub problems is just

5
many
1 **Page 34**
few

161-In which order we can sort?

increasing order only
decreasing order only
increasing order or decreasing order **Page 39**
both at the same time

162-The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?

16
10
32
31

163-Analysis of Selection algorithm ends up with,

(n) **pg#37**
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

164-We do sorting to,

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order **rep**

165-Divide-and-conquer as breaking the problem into a small number of

pivot
Sieve
smaller sub problems **rep**

Selection

166-The analysis of Selection algorithm shows the total running time is indeed ________in n,

Arithmetic
geometric
linear **Page 37**
orthogonal

167-How many elements do we eliminate in each time for the Analysis of Selection algorithm?

n / 2 elements **rep**
(n / 2) + n elements
n / 4 elements
2 n elements

168-Sieve Technique can be applied to selection problem?

True
False

169-For the heap sort we store the tree nodes in

level-order traversal **Page 40**
in-order traversal
pre-order traversal
post-order traversal

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

pointers **rep**
constants
variables
functions

171-For the heap sort we store the tree nodes in

level-order traversal rep____
in-order traversal
pre-order traversal
post-order traversal

172-. The sieve technique works in ___________ as follows

Phases **Page 34**
numbers
integers
routines

173- In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

linear
arithmetic
geometric rep
exponent

174-. We do sorting to,

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

175-. In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

T(n)
T(n / 2)
log n rep
n / 2 + n / 4

176-. In which order we can sort?

increasing order only
decreasing order only
increasing order or decreasing order rep both at the same time

177-. In Sieve Technique we do not know which item is of interest

True
False

178-. For the sieve technique we solve the problem,

recursively
mathematically
precisely

179-. Divide-and-conquer as breaking the problem into a small number of

pivot
Sieve
smaller sub problems
Selection

180-Divide-and-Conquer is as breaking the problem into a small number of

· **Smaller Sub Problems**
· Pivot
· Sieve
· Solutions

181-Analysis of Selection Sort ends up with

· **T(n)** **Page 37**
· T(1/1+n)
· T(n/2)
· T((n/2) +n)

182-How many elements do we eliminate each time for the Analysis of Selection Algorithm?

· (n / 2)+n Elements
· **n / 2 Elements**
· n / 4 Elements

· 2 n Elements

183-A *heap* is a left-complete binary tree that conforms to the ?
· Increasing Order
· Decreasing order
· Heap Order
· (nlog n) order

184-The Sieve Sequence is a special case where the number of smaller sub problems is just_ .· 4
· Many
· 1
· Few

185-Heaps can be stored in arrays without using any pointers this is due to the of the binary tree?
· Tree Nodes
· Right-Complete Nature
· **Left-Complete Nature**
· Tree Leaves

186-For the Heap Sort access to nodes involves simple _ operations:
· Geometric
· Linear
· Arithmetic
· Algebraic

187-The Analysis of Selection Sort shows that the total running time is indeed in n?
· Geometric
· **Linear**
· Arithmetic
· Algebraic

188-For the sieve technique we solve the problem
· **Recursively**
· Randomly
· Mathematically
· Precisely

189-How much time merger sort takes for an array of numbers?
· T(n^2)
· T(n) **Page 30**
· T(log n)
· T(n log n)

190-Divide-and-Conquer is as breaking the problem into a small number of **· Smaller Sub Problems rep**
· Pivot
· Sieve
· Solutions

191-Analysis of Selection Sort ends up with
· (n) rep
· T(1/1+n)
· T(n/2)
· T((n/2) +n)

192-How many elements do we eliminate each time for the Analysis of Selection Algorithm?
· (n / 2)+n Elements
· n / 2 Elements
· n / 4 Elements
· 2 n Elements

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· Decreasing order
· Heap Order
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· Many
· 1
· Few

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· Right-Complete Nature
· Left-Complete Nature
· Tree Leaves

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· Geometric
· Linear
· Arithmetic rep
· Algebraic

The Analysis of Selection Sort shows that the total running time is indeed in n?
· Geometric
· Linear pg#37
· Arithmetic
· Algebraic

For the sieve technique we solve the problem
· Recursively rep
· Randomly
· Mathematically
· Precisely

How much time merger sort takes for an array of numbers?
· T(n^2)

· **T(n)**
· T(log n)
· T(n log n)

1. Question # 1 of 10 (Start time: 06:18:58 PM) Total Marks: 1

We do sorting to,
Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order **Page 39**

2. Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1

Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:
left-complete **Page 40**
right-complete
tree nodes
tree leaves

3. Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1

Sieve Technique can be applied to selection problem?
Select correct option:
True **Page 35**
False

4. Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1

A heap is a left-complete binary tree that conforms to the___________
Select correct option:
increasing order only
decreasing order only
heap order **Page 40**
(log n) order

5. Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

Heap **Page 40**
binary tree
binary search tree
array

6. Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1

Divide-and-conquer as breaking the problem into a small number of
Select correct option:
pivot
Sieve
smaller sub problems **Page 34**
Selection

7. Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1

In Sieve Technique we do not know which item is of interest
Select correct option:
True **Page 34**
False

8. Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:
16
10
32
31

9. Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent ________________ series in the analysis,
Select correct option:
linear
arithmetic
geometric **Page 37**
exponent

10. Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1

For the heap sort, access to nodes involves simple ________________
operations.
Select correct option:
Arithmetic **Page 41**
binary
algebraic
logarithmic

11. Question # 1 of 10 (Start time: 10:02:41 PM) Total Marks: 1

For the sieve technique we solve the problem,
Select correct option:
Recursively **Page 34**
mathematically
precisely
accurately

12. The sieve technique works in ___________ as follows
Select correct option:
Phases **Page 34**
numbers
integers
routines

13. Slow sorting algorithms run in,
Select correct option:
~~O~~(n^2) **Page 39**
T(n^2)
T(n)
T(log n)

14. A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

15. In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic
geometric
exponent

16. In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n **Page 37**
n / 2 + n / 4

17. The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1 **Page 34**
few

18. In which order we can sort?
Select correct option:
increasing order only
decreasing order only
increasing order or decreasing order **Page 39**
both at the same time

19. The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:
16
10
32
31

20. Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

21. We do sorting to,
Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

22. Divide-and-conquer as breaking the problem into a small number of
Select correct option:
pivot
Sieve
smaller sub problems
Selection

23. The analysis of Selection algorithm shows the total running time is indeed **________**in n,
Select correct option:
arithmetic
geometric
linear **Page 37**
orthogonal

24. How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

25. Sieve Technique can be applied to selection problem?
Select correct option:

True
False

26. For the heap sort we store the tree nodes in
Select correct option:

level-order traversal **Page 40**
in-order traversal
pre-order traversal
post-order traversal

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

pointers
constants
variables
functions

28. For the heap sort we store the tree nodes in

level-order traversal
in-order traversal
pre-order traversal
post-order traversal

29. The sieve technique works in ___________ as follows

Phases **Page 34**
numbers
integers
routines

30. In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

linear
arithmetic
geometric
exponent

31. We do sorting to,

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

32. In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

T(n)
T(n / 2)
log n
n / 2 + n / 4

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increasing order only
decreasing order only
increasing order or decreasing order
both at the same time

34. In Sieve Technique we do not know which item is of interest

True
False

35. For the sieve technique we solve the problem,

recursively
mathematically
precisely

36. Divide-and-conquer as breaking the problem into a small number of

pivot
Sieve
smaller sub problems
Selection

36. Question # 1 of 10 Total Marks: 1
Divide-and-Conquer is as breaking the problem into a small number of
· **Smaller Sub Problems**
· Pivot
· Sieve
· Solutions

37. Question # 2 of 10 Total Marks: 1
Analysis of Selection Sort ends up with

· **T(n)** **Page 37**
· T(1/1+n)
· T(n/2)
· T((n/2) +n)

38. Question # 3 of 10 Total Marks: 1
How many elements do we eliminate each time for the Analysis of Selection Algorithm?
· (n / 2)+n Elements
· n / 2 Elements
· n / 4 Elements
· 2 n Elements

39. Question # 4 of 10 Total Marks: 1
A *heap* is a left-complete binary tree that conforms to the ?
· Increasing Order
· Decreasing order
· Heap Order
· (nlog n) order

40. Question # 5 of 10 Total Marks: 1
The Sieve Sequence is a special case where the number of smaller sub problems is just_ .

· 4
· Many
· 1
· Few

41. Question # 6 of 10 Total Marks: 1
Heaps can be stored in arrays without using any pointers this is due to the of the binary tree?

· Tree Nodes
· Right-Complete Nature
· Left-Complete Nature
· Tree Leaves

42. Question # 7 of 10 Total Marks: 1
For the Heap Sort access to nodes involves simple _ operations:
· Geometric
· Linear
· Arithmetic
· Algebraic

43. Question # 8 of 10 Total Marks: 1
The Analysis of Selection Sort shows that the total running time is indeed in n?
· Geometric
· Linear
· Arithmetic
· Algebraic

44. Question # 9 of 10 Total Marks: 1
For the sieve technique we solve the problem
· **Recursively**
· Randomly
· Mathematically
· Precisely

45. Question # 10 of 10 Total Marks: 1
How much time merger sort takes for an array of numbers?
· T(n^2)
· T(n) **Page 30**
· T(log n)
· T(n log n)

46. _______________ is a graphical representation of an algorithm
1. Segma Notation
2. Thita Notation
3. Flowchart
4. Asymptotic notation
Correct Choice : 3 From Lectuer # 2

47. What will be the total number of max comparisons if we run brute-force maxima algorithm with n elements?
1. n^2
2. n^n/2
3. n
4. n^8
Correct Choice : 1 From Lectuer # 3

48. function is given like 4n^4+ 5n^3+n what is the run time of this
1. theata(n^4)
2. theata(n^3)
3. theata(4n^4+ 5n^3)
4. theata(4n^4+ 5n^3)
Correct Choice : 1 From Lectuer # 4

49. Consider the following
code: For(j=1; j

50. Execution of the following code fragment
int i = N; while (i > 0)
2
{ int Sum = 0; int j;
for (j = 0; j Sum++;
cout

51. Let us say we have an algorithm that carries out N2 operations for an input of size N. Let us say that a computer takes 1 microsecond (1/1000000 second) to carry out one operation. How long does the algorithm run for an input of size 3000?
1. 90 seconds
2. 9 seconds
3. 0.9 seconds
4. 0.09 seconds
Correct Choice : 2 From Lectuer # 4

52. The appropriate big thita classification of the given function. f(n) = 4n2 + 97n + 1000 is
1. ?(n)
2. O(2^n)
3. O(n^2)
4. O(n^2logn)
Correct Choice : 3 From Lectuer # 4

53. The appropriate big ? classification of the given function. f(n) = 4n2 + 97n + 1000 is
1. ?(n)
2. O(2^n)
3. O(n^2)
4. O(n^2logn)
Correct Choice : 3 From Lectuer # 4

54. Which sorting algorithm is faster

1. O (n log n)
2. O n^2
3. O (n+k)
4. O n^3

Correct Choice : 3 From Lectuer # 5

55 - If algorithm A has running time 7n^2 + 2n + 3 and algorithm B has running time 2n^2, then

1. Both have same asymptotic time complexity
2. A is asymptotically greater
3. B is asymptotically greater
4. None of others

Correct Choice : 1 From Lectuer # 6

56 - If algorithm A has running time 7n^2 + 2n + 3 and algorithm B has running time 2n^2, then

1. Both have same asymptotic time complexity
2. A is asymptotically greater
3. B is asymptotically greater
4. None of others

Correct Choice : 1 From Lectuer # 6

57 - What is the solution to the recurrence T(n) = T(n/2)+n .

1. O(logn)
2. O(n)
3. O(nlogn)
4. O(n^2)

Correct Choice : 1 From Lectuer # 8

58 - How much time merge sort takes for an array of numbers?

1. (n^2)
2. T(n)
3. T(log n)
4. T(n log n)

Correct Choice : 2 From Lectuer # 8

59 - Consider the following Algorithm:
Factorial (n){ if (n=1)
return 1 else return (n *
Factorial(n-1))
} Recurrence for the following algorithm is:
1. T(n) = T(n-1) +1
2. T(n) = nT(n-1) +1
3. T(n)= T(n-1) +n
4. T(n)=T(n(n-1)) +1
Correct Choice : 4 From Lectuer # 9

60 - For the Sieve Technique we take time
1. T(nk) .
2. T(n / 3) 4
3. n^2
4. n/3
Correct Choice : 1 From Lectuer # 10

61 - Sieve Technique applies to problems where we are interested in finding a single item from a larger set of ______________
1. n items
2. phases
3. pointers
4. constant
Correct Choice : 1 From Lectuer # 10

62 - In Sieve Technique we do not know which item is of interest
1. FALSE
2. TRUE
Correct Choice : 2 From Lectuer # 10

63 - For the sieve technique we solve the problem,
1. recursively
2. mathematically
3. accurately
4. precisely
Correct Choice : 1 From Lectuer # 10

64 - For the Sieve Technique we take time
1. T(nk)
2. T(n / 3)
3. n^2
4. n/3
Correct Choice : 1 From Lectuer # 10

65 - How many elements do we eliminate in each time for the Analysis of Selection algorithm?
1. n / 2 elements
2. (n / 2) + n elements
3. n / 4 elements
4. n elements
Correct Choice : 4 From Lectuer # 10

66 - Sieve Technique applies to problems where we are interested in finding a single item from a larger set of **______________**
1. n items
2. phases
3. pointers
4. constant
Correct Choice : 1 From Lectuer # 10

67 - Sieve Technique can be applied to selection problem?
1. TRUE
2. FALSE
Correct Choice : 1 From Lectuer # 10

68 - The analysis of Selection algorithm shows the total running time is indeed **________**in n,
1. arithmetic
2. geometric
3. linear
4. orthogonal
Correct Choice : 3 From Lectuer # 10

69 - The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
1. divide-and-conquer
2. decrease and conquer
3. greedy nature
4. 2-dimension Maxima
Correct Choice : 1 From Lectuer # 10

70 - The sieve technique works in **____________** as follows
1. phases
2. numbers
3. integers
4. routines
Correct Choice : 1 From Lectuer # 10

71 - The sieve technique works in **___________** as follows
1. phases
2. numbers
3. integers
4. routines
Correct Choice : 1 From Lectuer # 10

72 - A (an) **_________** is a left-complete binary tree that conforms to the heap order
1. heap
2. binary tree
3. binary search tree
4. array
Correct Choice : 1 From Lectuer # 11

73 - For the heap sort, access to nodes involves simple **_______________** operations.
1. arithmetic
2. binary
3. algebraic
4. logarithmic
Correct Choice : 1 From Lectuer # 11

74 - We do sorting to,
1. keep elements in random positions
2. keep the algorithm run in linear order
3. keep the algorithm run in (log n) order
4. keep elements in increasing or decreasing order
Correct Choice : 1 From Lectuer # 11

75 - For the heap sort we store the tree nodes in
1. level-order traversal
2. in-order traversal
3. pre-order traversal
4. post-order traversal
Correct Choice : 1 From Lectuer # 11

76 - In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
1. T(n)
2. T(n / 2)
3. log n
4. n / 2 + n / 4
Correct Choice : 3 From Lectuer # 11

77 - In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
1. T(n)
2. T(n / 2)
3. log n
4. n / 2 + n / 4
Correct Choice : 3 From Lectuer # 11

78 - In which order we can sort?
1. increasing order only
2. decreasing order only
3. increasing order or decreasing order
4. both at the same time
Correct Choice : 3 From Lectuer # 11

79 - One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
1. pointers
2. constants
3. variables
4. functions
Correct Choice : 1 From Lectuer # 11

80 - One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
1. pointers
2. constants
3. variables
4. functions
Correct Choice : 1 From Lectuer # 11

81 - Slow sorting algorithms run in,
1. O(n^2) 8
2. O(n)
3. O(log n)
4. O(n log n)
Correct Choice : 1 From Lectuer # 11

82 - What is the total time to heapify?
1. ?(log n)
2. ?(n log n)
3. ?(n^2 log n)
4. ?(log^2n)
Correct Choice : 1 From Lectuer # 12

83- When we call heapify then at each level the comparison performed takes time It will take O (1)
1. Time will vary according to the nature of input data
2. It can not be predicted
3. It will take O (log n)
4. None of the Given
Correct Choice : 3 From Lectuer # 12

84 - After partitioning array in Quick sort, pivot is placed in a position such that
1. Values smaller than pivot are on left and larger than pivot are on right
2. Values larger than pivot are on left and smaller than pivot are on right
3. Pivot is the first element of array
4. Pivot is the last element of array
Correct Choice : 2 From Lectuer # 13

85 - The running time of quick sort depends heavily on the selection of
1. No of inputs
2. Arrangement of elements in array
3. Size o elements
4. Pivot element
Correct Choice : 4 From Lectuer # 13

86 - In Quick Sort Constants hidden in T(n log n) are
1. Large
2. Medium
3. Small
4. Not Known
Correct Choice : 3 From Lectuer # 14

87 - In Quick Sort Constants hidden in T(n log n) are
1. Large
2. Medium
3. Small
4. Not Known
Correct Choice : 3 From Lectuer # 14

88 - Is it possible to sort without making comparisons?
1. Yes
2. No
Correct Choice : 1 From Lectuer # 15

89 - Merge sort is stable sort, but not an in-place algorithm
1. TRUE
2. FALSE
Correct Choice : 1 From Lectuer # 15

90 - In counting sort, once we know the ranks, we simply **__________** numbers to their final positions in an output array.
1. Delete
2. copy
3. Mark
4. arrange
Correct Choice : 2 From Lectuer # 15

91 - An in place sorting algorithm is one that uses **___** arrays for storage
1. Two dimensional arrays
2. More than one array
3. No Additional Array
4. None of the above
Correct Choice : 3 From Lectuer # 15

92 - Continuation/counting sort is suitable to sort the elements in range 1 to k
1. K is Large
2. K is not known
3. K may be small or large
4. K is small
Correct Choice : 4 From Lectuer # 15

93 - In stable sorting algorithm.
1. If duplicate elements remain in the same relative position after sorting
2. One array is used
3. More than one arrays are required
4. Duplicating elements not handled
Correct Choice : 1 From Lectuer # 15

94 - One example of in place but not stable algorithm is
1. Merger Sort
2. Quick Sort
3. Continuation Sort
4. Bubble Sort
Correct Choice : 2 From Lectuer # 15

95 - One example of in place but not stable algorithm is
1. Merger Sort
2. Quick Sort
3. Continuation Sort
4. Bubble Sort
Correct Choice : 2 From Lectuer # 15

96 - One of the clever aspects of heaps is that they can be stored in arrays without using any **________________**.
1. pointers
2. constants
3. variables
4. functions
Correct Choice : 1

97 - Quick sort is
1. Stable & in place
2. Not stable but in place
3. Stable but not in place
4. Some time stable & some times in place
Correct Choice : 3 From Lectuer # 15

98 - Quick sort is
1. Stable & in place
2. Not stable but in place
3. Stable but not in place
4. Some time stable & some times in place
Correct Choice : 2 From Lectuer # 15

99 - Which may be a stable sort?
1. Merger
2. Insertion
3. Both above
4. None of the above
Correct Choice : 3 From Lectuer # 15

100 - Which of the following sorting algorithms is stable?
(i) Merge sort,
(ii) Quick sort,
(iii) Heap sort,
(iv) Counting Sort.
1. Only i
2. Only ii
3. Both i and ii
4. Both iii and iv
Correct Choice : 1 From Lectuer # 15

101 - Mergesort is a stable algorithm but not an in-place algorithm.
1. TRUE
2. FALSE
Correct Choice : 1 From Lectuer # 16

102 - Memorization is?
1. To store previous results for future use
2. To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later
3. To make the process accurate
4. None of the above
Correct Choice : 2 From Lectuer # 16

103 - Dynamic programming algorithms need to store the results of intermediate sub-problems.
1. TRUE
2. FALSE
Correct Choice : 1 From Lectuer # 17

104 - Dynamic programming uses a top-down approach.
1. TRUE
2. FALSE
Correct Choice : 2 From Lectuer # 17

105 - The edit distance between FOOD and MONEY is
1. At most four
2. At least four
3. Exact four
4. Wrong
Correct Choice : 1 From Lectuer # 17

106 - The edit distance between FOOD and MONEY is
1. At most four
2. At least four
3. Exact four
4. Wrong
Correct Choice : 1 From Lectuer # 17

107 - If there are O (n^2) entries in edit distance matrix then the total running time is
1. O (1)
2. O (n^2)
3. O (n)
4. O (n log n)
Correct Choice : 2 From Lectuer # 18

108 - A p x q matrix A can be multiplied with a q x r matrix B. The result will be a p x r matrix C. There are (p . r) total entries in C and each takes **_________** to compute.
1. O (q)
2. O (1)
3. O (n^2)
4. O (n^3)
Correct Choice : 1 From Lectuer # 19

109 - For Chain Matrix Multiplication we can not use divide and conquer approach because,
1. We do not know the optimum k
2. We use divide and conquer for sorting only
3. We can easily perform it in linear time
4. Size of data is not given
Correct Choice : 1 From Lectuer # 19

110 - A p x q matrix A can be multiplied with a q x r matrix B. The result will be a p x r matrix C. There are (p . r) total entries in C and each takes **_________** to compute.
1. O (q)
2. O (1)
3. O (n^2)
4. O (n^3)
Correct Choice : 1 From Lectuer # 19

111 - The Knapsack problem belongs to the domain of **________________** problems.
1. Optimization
2. NP Complete
3. Linear Solution
4. Sorting
Correct Choice : 1 From Lectuer # 21

112 - Suppose we have three items as shown in the following table, and suppose the capacity of the knapsack is 50 i.e. W = 50. Item Value Weight 1 60 10 2 100 20 3 120 30 The optimal solution is to pick
1. Items 1 and 2
2. Items 1 and 3
3. Items 2 and 3
4. None of these
Correct Choice : 4 From Lectuer # 22
Correct Choice : 3 From Lectuer # 21

113 - Huffman algorithm uses a greedy approach to generate a postfix code T that minimizes the expected length B (T) of the encoded string.
1. TRUE
2. FALSE
Correct Choice : 1 From Lectuer # 22

114 - The codeword assigned to characters by the Huffman algorithm have the property that no codeword is the postfix of any other.
1. TRUE
2. FALSE
Correct Choice : 2 From Lectuer # 22

115 - The greedy part of the Huffman encoding algorithm is to first find two nodes with larger frequency.
1. TRUE
2. FALSE

Correct Choice : 2 From Lectuer # 22

116 - An optimization problem is one in which you want to find,
1. Not a solution
2. An algorithm
3. Good solution
4. The best solution

CS502 DESIGN AND ANALYSIS OF ALGORITHMS
FALL 2010 QUIZ#1 RESCHEDULED HELD ON 25 NOV 2010

117. Question # 1 of 10 Total Marks: 1
Divide-and-Conquer is as breaking the problem into a small number of
· Smaller Sub Problems
· Pivot
· Sieve
· Solutions

118. Question # 2 of 10 Total Marks: 1
Analysis of Selection Sort ends up with
· T(n)
· T(1/1+n)
· T(n/2)
· T((n/2) +n)

119. Question # 3 of 10 Total Marks: 1
How many elements do we eliminate each time for the Analysis of Selection Algorithm?
· (n / 2)+n Elements
· n / 2 Elements
· n / 4 Elements
· 2 n Elements

120. Question # 4 of 10 Total Marks: 1
A *heap* is a left-complete binary tree that conforms to the ?
· Increasing Order
· Decreasing order
· Heap Order
· (nlog n) order

121. Question # 5 of 10 Total Marks: 1
The Sieve Sequence is a special case where the number of smaller sub problems is just_ .
· 4
· Many
· 1
· Few

122. Question # 6 of 10 Total Marks: 1
Heaps can be stored in arrays without using any pointers this is due to the _____ of the binary tree?
· Tree Nodes
· Right-Complete Nature
· Left-Complete Nature
· Tree Leaves

123. Question # 7 of 10 Total Marks: 1

For the Heap Sort access to nodes involves simple _ operations:

· Geometric

· Linear

· Arithmetic

· Algebraic

124. Question # 8 of 10 Total Marks: 1

The Analysis of Selection Sort shows that the total running time is indeed in n?

· Geometric

· Linear

· Arithmetic

· Algebraic

125. Question # 9 of 10 Total Marks: 1

For the sieve technique we solve the problem

· Recursively

· Randomly

· Mathematically

· Precisely

126. Question # 10 of 10 Total Marks: 1

How much time merger sort takes for an array of numbers?

· T(n^2)

· T(n)

· T(log n)

· **T(n log n)**

127. What type of instructions Random access machine can execute?
Choose best answer.
Geometric and arithmetic
Algebraic and logic
Arithmetic and logic **Page 10**
Parallel and recursive
128. Due to left complete nature of binary tree, the heap can be stored in
- **Arrays** **Page 40**
- Structures
- Link Lis
- Stack

129. What type of instructions Random Access Machine (RAM) can execute?
Choose best answer
Algebraic and logic
Geometric and arithmetic
Arithmetic and logic **Page 10**
Parallel and recursive

130. For Chain Matrix Multiplication we can not use divide and conquer approach because,
We do not know the optimum k **Page 86**
We use divide and conquer for sorting only ``
We can easily perform it in linear time
Size of data is not given
131. knapsack problem is called a "0-1" problem, because

????????????????????
Each item must be entirely accepted or rejected **Page 92**
????????????????????
??????????????????????

132. word Algorithm comes from the name of the muslim author **Abu Ja'far Mohammad ibn Musa al-Khowarizmi**. **Page 7**

133. al-Khwarizmi's work was written in a book titled **al Kitab al-mukhatasar fi hisab al-jabr wa'l-muqabalah** **Page 7**

134. What is the total time to heapify?
- **O(log n)** **Page 43**
- O(n log n)
- O(n2 logn)
- O(log2n)

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

Random access machine or RAM is a/an

- ► Machine build by Al-Khwarizmi
- ► Mechanical machine
- ► Electronics machine
- ► **Mathematical model** **Page 10**

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

________________ is a graphical representation of an algorithm

- ► Σ notation
- ► Θ notation
- ► **Flowchart**
- ► Asymptotic notation

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

A RAM is an idealized machine with _______________ random-access memory.

- ► 256MB
- ► 512MB
- ► **an infinitely large** **Page 10**
- ► 100GB

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

What type of instructions Random Access Machine (RAM) can execute? Choose best answer

- ► Algebraic and logic
- ► Geometric and arithmetic
- ► **Arithmetic and logic** **Page 10**
- ► Parallel and recursive

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

What will be the total number of max comparisons if we run brute-force maxima algorithm with n elements?

- ► n^2 **Page 14**
- ► $n^{\frac{n}{2}}$
- ► n
- ► n^8

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

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

- ► $O(\log n)$
- ► **$O(n)$**
- ► $O(n\log n)$
- ► $O(n^2)$

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

Consider the following code:

```
For(j=1; j<n;j++)
    For(k=1; k<15;k++)
        For(l=5; l<n; l++)
        {
            Do_something_constant();
        }
```

What is the order of execution for this code.

- ► **O(n)**
- ► O(n^3)
- ► O(n^2 log n)
- ► O(n^2)

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

Consider the following Algorithm:

```
Factorial (n){
  if (n=1)
    return 1
  else
    return (n * Factorial(n-1))
{
```

Recurrence for the following algorithm is:

- ► T(n) = T(n-1) +1
- ► T(n) = nT(n-1) +1
- ► T(n)= T(n-1) +n
- ► **T(n)=T(n(n-1)) +1**

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

What is the total time to heapify?

- ► **O(log n)** **Page 43**
- ► O(n log n)
- ► O(n^2 log n)
- ► O($\log^2$ n)

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

When we call heapify then at each level the comparison performed takes time

- ► **It will take Θ (1)** **Page 43**
- ► Time will vary according to the nature of input data
- ► It can not be predicted
- ► It will take Θ (log n)

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

In Quick sort, we don't have the control over the sizes of recursive calls

- ► **True** **Page 49**
- ► False
- ► Less information to decide
- ► Either true or false

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

Is it possible to sort without making comparisons?

- ► **Yes** **Page 57**
- ► No

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

If there are Θ (n^2) entries in edit distance matrix then the total running time is

- ► Θ (1)
- ► **Θ (n^2)** **Page 84**
- ► Θ (n)
- ► Θ (n log n)

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

For Chain Matrix Multiplication we can not use divide and conquer approach because,

- ► **We do not know the optimum k** **Page 86**
- ► **We use divide and conquer for sorting only**
- ► We can easily perform it in linear time
- ► Size of data is not given

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

The Knapsack problem belongs to the domain of _______________ problems.

- ► **Optimization** **Page 91**
- ► NP Complete
- ► Linear Solution
- ► Sorting

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

Suppose we have three items as shown in the following table, and suppose the capacity of the knapsack is 50 i.e. W = 50.

Item	Value	Weight
1	60	10
2	100	20
3	120	30

The optimal solution is to pick

► Items 1 and 2

► Items 1 and 3

► **Items 2 and 3** **Page 91**

► None of these

151. Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,

upper
lower **Page 39**
average
log n

152. The number of nodes in a complete binary tree of height h is
2^(h+1) – 1 **Page 40**
2*(h+1) – 1
2*(h+1)
((h+1) ^ 2) – 1

153. For the Sieve Technique we take time
T(nk) **Page 34**
T(n/3)
n^2
n/3

154. In Quick sort algorithm, constants hidden in T(n lg n) are
large
medium
Not known
small

155. Memoization is:
To store previous results for further use
To avoid unnecessary repetitions by writing down the results of recursive calls and looking them again if needed later. **Page 74**
To make the process accurate
None of the above

156. Counting sort has time complexity of?

O(n)
O(n+k)
O(nlogn)
O(k)

CS502 - Fundamentals of Algorithms

Quiz No.1 12-11-2012

Question # 1 of 10 (Start time: 06:18:58 PM) Total Marks: 1
We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:

left-complete
right-complete
tree nodes
tree leaves

Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1
Sieve Technique can be applied to selection problem?
Select correct option:

True
False

Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ___________
Select correct option:

increasing order only
decreasing order only
heap order
(log n) order

Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree
binary search tree
array

Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1
Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot

Sieve
smaller sub problems
Selection

Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:

True
False

Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1
The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:

16
10
32
31

Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:

linear
arithmetic
geometric
exponent

Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1
For the heap sort, access to nodes involves simple _______________ operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic

For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
The sieve technique works in ___________ as follows
Select correct option:
phases

numbers
integers
routines
Slow sorting algorithms run in,
Select correct option:
T(n^2)
T(n)
T(log n)
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic
geometric
exponent

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few

In which order we can sort?
Select correct option:
increasing order only
decreasing order only
increasing order or decreasing order
both at the same time

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:
16
10

32
31

Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

arithmetic
geometric
linear
orthogonal

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:

n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Sieve Technique can be applied to selection problem?
Select correct option:

True
false

For the heap sort we store the tree nodes in
Select correct option:

level-order traversal
in-order traversal
pre-order traversal
post-order traversal

One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Select correct option:
pointers
constants
variables
functions

A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Divide-and-conquer as breaking the problem into a small number of
Select correct option:
pivot
Sieve
smaller sub problems
Selection

Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes

tree leaves

For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately

A heap is a left-complete binary tree that conforms to the ___________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

We do sorting to,
Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

How much time merge sort takes for an array of numbers?
Select correct option:
T(n^2)
T(n)
T(log n)
T(n log n)

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

Question # 1 of 10 (Start time: 08:17:23 AM) Total M a r k s: 1
The number of nodes in a complete binary tree of height h is
Select correct option:
2^(h+1) – 1
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1

Question # 2 of 10 (Start time: 08:18:46 AM) Total M a r k s: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Question # 3 of 10 (Start time: 08:19:38 AM) Total M a r k s: 1
In Sieve Technique we do not know which item is of interest
Select correct option:
True
False

Question # 4 of 10 (Start time: 08:20:33 AM) Total M a r k s: 1
Heaps can be stored in arrays without using any pointers; this is due to the
____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes
tree leaves

Question # 5 of 10 (Start time: 08:21:59 AM) Total M a r k s: 1
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as
many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

Question # 6 of 10 (Start time: 08:23:01 AM) Total M a r k s: 1
For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
Theta asymptotic notation for T (n) :
Select correct option:

Set of functions described by: c1g(n)Set of functions described by c1g(n)>=f(n) for c1 s
Theta for T(n)is actually upper and worst case comp
Set of functions described by:
c1g(n)

Question # 8 of 10 (Start time: 08:24:39 AM) Total M a r k s: 1
The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few

Question # 9 of 10 (Start time: 08:25:54 AM) Total M a r k s: 1
Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct option:
n items
phases
pointers
constant

Question # 10 of 10 (Start time: 08:26:44 AM) Total M a r k s: 1
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines

Memorization is?

To store previous results for future use

To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later

To make the process accurate

None of the above

Question # 2 of 10 Total M a r k s: 1

Which sorting algorithm is faster

O (n log n)

O n^2

O (n+k)

O n^3

Quick sort is

Stable & in place

Not stable but in place

Stable but not in place

Some time stable & some times in place

One example of in place but not stable algorithm is

Merger Sort

Quick Sort

Continuation Sort

Bubble Sort

In Quick Sort Constants hidden in T(n log n) are

Large

Medium

Small

Not Known

Continuation sort is suitable to sort the elements in range 1 to k

K is Large

K is not known

K may be small or large

K is small

In stable sorting algorithm.

If duplicate elements remain in the same relative position after sorting

One array is used

More than one arrays are required

Duplicating elements not handled

Which may be a stable sort?

Merger

Insertion

Both above

None of the above

An in place sorting algorithm is one that uses ___ arrays for storage

Two dimensional arrays

More than one array

No Additional Array

None of the above

Continuing sort has time complexity of ?

O(n)

O(n+k)

O(nlogn)

O(k)

We do sorting to,

keep elements in random positions

keep the algorithm run in linear order

keep the algorithm run in (log n) order

keep elements in increasing or decreasing order

In Sieve Technique we donot know which item is of interest

True

False

A (an) _________ is a left-complete binary tree that conforms to the

heap order

heap

binary tree

binary search tree

array

27. The sieve technique works in ___________ as follows

phases

numbers

integers

routines

For the sieve technique we solve the problem,

recursively

mathematically

precisely

accurately

29. For the heap sort, access to nodes involves simple _______________

operations.

arithmetic

binary

algebraic

logarithmic

The analysis of Selection algorithm shows the total running time is

indeed ________in n,\

arithmetic

geometric

linear

orthogonal

For the heap sort, access to nodes involves simple _______________

operations.

Select correct option:

arithmetic

binary

algebraic

logarithmic

Sieve Technique applies to problems where we are interested in finding a

single item from a larger set of _____________

Select correct option:

n items

phases

pointers

constant

Question # 9 of 10 (Start time: 07:45:36 AM) Total Marks: 1

In Sieve Technique we do not know which item is of interest

Select correct option:

True

False

How much time merge sort takes for an array of numbers?

Select correct option:

T(n^2)

T(n)

T(log n)

T(n log n)

For the heap sort we store the tree nodes in

Select correct option:

level-order traversal

in-order traversal

pre-order traversal

post-order traversal

Sorting is one of the few problems where provable ________ bonds exits on

how fast we can sort,

Select correct option:

upper

lower

average

log n

single item from a larger set of _____________

Select correct option:

n items

phases

pointers

constant

A heap is a left-complete binary tree that conforms to the ___________

Select correct option:

increasing order only

decreasing order only

heap order

(log n) order

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

Select correct option:

T(n)

T(n / 2)

log n

n / 2 + n / 4

The reason for introducing Sieve Technique algorithm is that it illustrates a

very important special case of,

Select correct option:

divide-and-conquer

decrease and conquer

greedy nature

2-dimension Maxima

The sieve technique works in ___________ as follows

Select correct option:

phases

numbers

integers

routines

For the Sieve Technique we take time

Select correct option:

T(nk)

T(n / 3)

n^2

n/3

In the analysis of Selection algorithm, we eliminate a constant fraction of the

array with each phase; we get the convergent _______________ series in the

analysis,

linear

arithmetic

geometric

exponent

Analysis of Selection algorithm ends up with,

Select correct option:

T(n)

T(1 / 1 + n)

T(n / 2)

T((n / 2) + n)

Quiz Start Time: 07:23 PM
Time Left 90
sec(s)
Question # 1 of 10 (Start time: 07:24:03 PM) Total M a r k s: 1
In in-place sorting algorithm is one that uses arrays for storage :
Select correct option:
An additional array
No additioanal array
Both of above may be true according to algorithm
More than 3 arrays of one dimension.

Time Left 89
sec(s)
Question # 2 of 10 (Start time: 07:25:20 PM) Total M a r k s: 1
Which sorting algorithn is faster :
Select correct option:
O(n^2)
O(nlogn)
O(n+k)
O(n^3)

In stable sorting algorithm:

Select correct option:

One array is used

In whcih duplicating elements are not handled.

More then one arrays are required.

Duplicating elements remain in same relative posistion after sorting.

Counting sort has time complexity:

Select correct option:

O(n)

O(n+k)

O(k)

O(nlogn)

Counting sort is suitable to sort the elements in range 1 to k:

Select correct option:

K is large

K is small

K may be large or small

None

Memorization is :

Select correct option:

To store previous results for further use.

To avoid unnecessary repetitions by writing down the results of recursive calls and looking them again if needed later

To make the process accurate.

None of the above

The running time of quick sort depends heavily on the selection of

Select correct option:

No of inputs

Arrangement of elements in array

Size o elements

Pivot elements

Which may be stable sort:

Select correct option:

Bubble sort

Insertion sort

Both of above

In Quick sort algorithm, constants hidden in T(n lg n) are
Select correct option:
Large
Medium
Not known
small

Quick sort is
Select correct option:
Stable and In place
Not stable but in place
Stable and not in place
Some time in place and send some time stable

For the Sieve Technique we take time

T(nk)

T(n / 3)

n^2

n/3

The sieve technique is a special case, where the number of sub problems is just

Select correct option:

5

Many

1

Few

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,

Select correct option:

divide-and-conquer

decrease and conquer

greedy nature

2-dimension Maxima

Which may be stable sort:
Select correct option:
Bubble sort
Insertion sort
Both of above
Selection sort

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic
geometric
exponent

In Quick sort algorithm, constants hidden in T(n lg n) are
Select correct option:

Large
Medium
Not known
small

How much time merge sort takes for an array of numbers?
Select correct option:

T(n^2)
T(n)
T(log n)
T(n log n)

Counting sort has time complexity:
Select correct option:

O(n)
O(n+k)
O(k)
O(nlogn)

In which order we can sort?
Select correct option:

increasing order only

decreasing order only
increasing order or decreasing order
both at the same time

A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree
binary search tree
array

The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

arithmetic
geometric
linear
orthogonal

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
Select correct option:

There is explicit combine process as well to conquer the solution.
No work is needed to combine the sub-arrays, the array is already sorted
Merging the sub arrays
None of above.

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct option:

upper
lower
average
log n

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
T(n)
T(n / 2)
log n
n / 2 + n / 4

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
There is explicit combine process as w ell to conquer
No w ork is needed to combine the sub-arrays, the a
Merging the subarrays

None of above

The number of nodes in a complete binary tree of height h is
2^(h+1) – 1
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Which sorting algorithn is faster :
O(n^2)
O(nlogn)
O(n+k)
O(n^3)

We do sorting to,
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Slow sorting algorithms run in,
T(n^2)
T(n)
T(log n)
T(n log n)

One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Pointers
Constants
Variables
Functions

Counting sort is suitable to sort the elements in range 1 to k:
K is large
K is small
K may be large or small
None

We do sorting to,
Select correct option:

keep elements in random positions

keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:

left-complete
right-complete
tree nodes
tree leaves

Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1
Sieve Technique can be applied to selection problem?
Select correct option:

True
False

Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ___________
Select correct option:

increasing order only
decreasing order only
heap order
(log n) order

Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree
binary search tree
array

Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1
Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:

True
False

Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1
The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:

16
10
32
31

Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:

linear
arithmetic
geometric
exponent

Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1
For the heap sort, access to nodes involves simple _______________ operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic

For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines
Slow sorting algorithms run in,
Select correct option:
T(n^2)
T(n)
T(log n)
A (an) _________ is a left-complete binary tree that conforms to the heap order

Select correct option:
heap
binary tree
binary search tree
array

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic
geometric
exponent

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few

In which order we can sort?
Select correct option:
increasing order only
decreasing order only
increasing order or decreasing order
both at the same time

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:
16
10
32
31

Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

arithmetic
geometric
linear
orthogonal

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:

n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Sieve Technique can be applied to selection problem?
Select correct option:

True
false

For the heap sort we store the tree nodes in
Select correct option:

level-order traversal
in-order traversal
pre-order traversal
post-order traversal

One of the clever aspects of heaps is that they can be stored in arrays without using any ________________.
Select correct option:
pointers
constants
variables
functions

A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Divide-and-conquer as breaking the problem into a small number of
Select correct option:
pivot
Sieve
smaller sub problems
Selection

Heaps can be stored in arrays without using any pointers; this is due to the _____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes
tree leaves

For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately

A heap is a left-complete binary tree that conforms to the ___________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

We do sorting to,
Select correct option:
keep elements in random positions

keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

How much time merge sort takes for an array of numbers?
Select correct option:
T(n^2)
T(n)
T(log n)
T(n log n)

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

Question # 1 of 10 (Start time: 08:17:23 AM) Total M a r k s: 1
The number of nodes in a complete binary tree of height h is
Select correct option:
2^(h+1) – 1
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1
Question # 2 of 10 (Start time: 08:18:46 AM) Total M a r k s: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Question # 3 of 10 (Start time: 08:19:38 AM) Total M a r k s: 1
In Sieve Technique we do not know which item is of interest
Select correct option:
True
False

Question # 4 of 10 (Start time: 08:20:33 AM) Total M a r k s: 1
Heaps can be stored in arrays without using any pointers; this is due to the

____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes
tree leaves

Question # 5 of 10 (Start time: 08:21:59 AM) Total M a r k s: 1
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

Question # 6 of 10 (Start time: 08:23:01 AM) Total M a r k s: 1
For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
Theta asymptotic notation for T (n) :
Select correct option:
Set of functions described by: c1g(n)Set of functions described by c1g(n)>=f(n) for c1 s
Theta for T(n)is actually upper and worst case comp
Set of functions described by:
c1g(n)

Question # 8 of 10 (Start time: 08:24:39 AM) Total M a r k s: 1
The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few
Question # 9 of 10 (Start time: 08:25:54 AM) Total M a r k s: 1
Sieve Technique applies to problems where we are interested in finding a single item from a larger set of

____
Select correct option:
n items
phases
pointers
constant

Question # 10 of 10 (Start time: 08:26:44 AM) Total M a r k s: 1
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers

integers
routines

Memorization is?
To store previous results for future use
To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later
To make the process accurate
None of the above

Question # 2 of 10 Total M a r k s: 1
Which sorting algorithm is faster
O (n log n)
O n^2
O (n+k)
O n^3

Quick sort is
Stable & in place
Not stable but in place
Stable but not in place
Some time stable & some times in place

One example of in place but not stable algorithm is
Merger Sort
Quick Sort
Continuation Sort
Bubble Sort

In Quick Sort Constants hidden in T(n log n) are
Large
Medium
Small
Not Known

Continuation sort is suitable to sort the elements in range 1 to k
K is Large
K is not known
K may be small or large
K is small

In stable sorting algorithm.
If duplicate elements remain in the same relative position after sorting
One array is used
More than one arrays are required
Duplicating elements not handled

Which may be a stable sort?
Merger
Insertion
Both above

None of the above

An in place sorting algorithm is one that uses ___ arrays for storage
Two dimensional arrays
More than one array
No Additional Array
None of the above

Continuing sort has time complexity of ?
O(n)
O(n+k)
O(nlogn)
O(k)

We do sorting to,
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

In Sieve Technique we donot know which item is of interest

True
False
A (an) _________ is a left-complete binary tree that conforms to the heap order
heap
binary tree
binary search tree
array
27. The sieve technique works in ___________ as follows
phases
numbers
integers
routines

For the sieve technique we solve the problem,
recursively
mathematically
precisely
accurately
29. For the heap sort, access to nodes involves simple _______________ operations.
arithmetic
binary
algebraic
logarithmic

The analysis of Selection algorithm shows the total running time is
indeed ________in n,\
arithmetic
geometric
linear
orthogonal

For the heap sort, access to nodes involves simple _______________
operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic

Sieve Technique applies to problems where we are interested in finding a
single item from a larger set of _____________
Select correct option:
n items
phases
pointers
constant

Question # 9 of 10 (Start time: 07:45:36 AM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:
True
False

How much time merge sort takes for an array of numbers?
Select correct option:
T(n^2)
T(n)
T(log n)
T(n log n)

For the heap sort we store the tree nodes in
Select correct option:
level-order traversal
in-order traversal
pre-order traversal
post-order traversal

Sorting is one of the few problems where provable ________ bonds exits on
how fast we can sort,
Select correct option:
upper
lower
average
log n

single item from a larger set of _____________
Select correct option:
n items
phases
pointers
constant

A heap is a left-complete binary tree that conforms to the ___________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines
For the Sieve Technique we take time
Select correct option:
T(nk)
T(n / 3)
n^2
n/3

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
linear
arithmetic
geometric
exponent

Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

Quiz Start Time: 07:23 PM
Time Left 90
sec(s)
Question # 1 of 10 (Start time: 07:24:03 PM) Total M a r k s: 1
In in-place sorting algorithm is one that uses arrays for storage :
Select correct option:
An additional array
No additional array
Both of above may be true according to algorithm
More than 3 arrays of one dimension.

Time Left 89
sec(s)
Question # 2 of 10 (Start time: 07:25:20 PM) Total M a r k s: 1
Which sorting algorithn is faster :
Select correct option:
O(n^2)
O(nlogn)
O(n+k)
O(n^3)
In stable sorting algorithm:
Select correct option:
One array is used
In which duplicating elements are not handled.
More then one arrays are required.
Duplicating elements remain in same relative posistion after sorting.

Counting sort has time complexity:
Select correct option:
O(n)
O(n+k)
O(k)
O(nlogn)

Counting sort is suitable to sort the elements in range 1 to k:
Select correct option:
K is large
K is small
K may be large or small
None

Memorization is :
Select correct option:
To store previous results for further use.
To avoid unnecessary repetitions by writing down the results of recursive calls and looking them again if needed later
To make the process accurate.
None of the above

The running time of quick sort depends heavily on the selection of
Select correct option:
No of inputs
Arrangement of elements in array
Size o elements
Pivot elements

Which may be stable sort:
Select correct option:
Bubble sort
Insertion sort
Both of above

In Quick sort algorithm, constants hidden in T(n lg n) are
Select correct option:
Large
Medium
Not known
small

Quick sort is
Select correct option:
Stable and In place
Not stable but in place
Stable and not in place
Some time in place and send some time stable

For the Sieve Technique we take time
T(nk)
T(n / 3)
n^2
n/3

The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
Many
1
Few

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

Quick sort is
Select correct option:
Stable and In place
Not stable but in place
Stable and not in place
Some time in place and send some time stable

Memoization is :
Select correct option:
To store previous results for further use.
To avoid unnecessary repetitions by writing down the results of
recursive calls and looking them again if needed later
To make the process accurate.
None of the above

One Example of in place but not stable sort is
Quick
Heap
Merge
Bubble

The running time of quick sort depends heavily on the selection of
Select correct option:
No of inputs
Arrangement of elements in array
Size o elements
Pivot elements

Question # 9 of 10 (Start time: 07:39:07 PM) Total M a r k s: 1
In Quick sort algorithm,constants hidden in T(n lg n) are
Select correct option:
Large
Medium
Not known
Small

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1. For the sieve technique we solve the problem,

☐ **recursively**

☐ mathematically

☐ precisely

☐ accurately

2. We do sorting to,

☐ keep elements in random positions

☐ keep the algorithm run in linear order

☐ keep the algorithm run in (log n) order

☐ **keep elements in increasing or decreasing order**

3. The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,

☐ **divide-and-conquer**

☐ decrease and conquer

☐ greedy nature

☐ 2-dimension Maxima

4. In Sieve Technique we donot know which item is of interest

☐ **True**

☐ False

5. In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

☐ T(n)

☐ T(n / 2)

☐ **log n**

☐ n / 2 + n / 4

6. Divide-and-conquer as breaking the problem into a small number of

☐ pivot

☐ Sieve

☐ **smaller sub problems**

☐ Selection

7. A heap is a left-complete binary tree that conforms to the ____________

☐ increasing order only

☐ decreasing order only

☐ **heap order**

☐ (log n) order

8. Slow sorting algorithms run in,

☐ T(n^2)

☐ T(n)

☐ T(log n)

☐ **T(n log n)**

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

☐ **pointers**

☐ constants

☐ variables

☐ functions

10. Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,

☐ upper

☐ **lower**

☐ average

☐ log n

☐ 2nd

11. For the sieve technique we solve the problem,

☐ mathematically

☐ precisely

☐ accurately

☐ **recursively**

12. Sieve Technique can be applied to selection problem?

☐ **true**

☐ false

13. How much time merge sort takes for an array of numbers?

☐ (n^2)

☐ T(n)

☐ T(log n)

☐ **T(n log n)**

14. For the Sieve Technique we take time

☐ **T(nk)**

☐ T(n / 3)

☐ n^2

☐ n/3

15. Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,

☐ **left-complete**

☐ right-complete

☐ tree nodes

☐ tree leaves

16. How many elements do we eliminate in each time for the Analysis of Selection algorithm?

☐ n / 2 elements

☐ **(n / 2) + n elements**

☐ n / 4 elements

☐ 2 n elements

17. We do sorting to,

☐ keep elements in random positions

☐ keep the algorithm run in linear order

☐ keep the algorithm run in (log n) order

☐ **keep elements in increasing or decreasing order**

18. In which order we can sort?

☐ increasing order only

☐ decreasing order only

☐ **increasing order or decreasing order**

☐ both at the same time

19. A heap is a left-complete binary tree that conforms to the ___________

☐ increasing order only

☐ decreasing order only

☐ **heap order**

☐ (log n) order

20. In the analysis of Selection algorithm, we make a number of passes, in

fact it could be as many as,

☐ T(n)

☐ T(n / 2)

☐ log n

☐ n / 2 + n / 4

21. A heap is a left-complete binary tree that conforms to the ____________

☐ increasing order only

☐ decreasing order only

☐ heap order

☐ (log n) order

22. How much time merge sort takes for an array of numbers?

☐ T(n^2)

☐ T(n)

☐ T(log n)

☐ T(n log n)

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

☐ pointers

☐ constants

☐ variables

☐ functions

24. n the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

☐ linear

☐ arithmetic

☐ geometric

☐ exponent

25. Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________

☐ n items

☐ phases

☐ pointers

☐ constant

26. A (an) _________ is a left-complete binary tree that conforms to the heap order

☐ **heap**

☐ binary tree

☐ binary search tree

☐ array

27. The sieve technique works in ___________ as follows

☐ **phases**

☐ numbers

☐ integers

☐ routines

28. For the sieve technique we solve the problem,

☐ **recursively**

☐ mathematically

☐ precisely

☐ accurately

29. For the heap sort, access to nodes involves simple _______________ operations.

☐ **arithmetic**

☐ binary

☐ algebraic

☐ logarithmic

30. The analysis of Selection algorithm shows the total running time is indeed ________in n,\

☐ arithmetic

☐ geometric

☐ **linear**

☐ orthogonal

Quiz Start Time: 07:39 AM
Time Left 32
sec(s)
Question # 1 of 10 (Start time: 07:39:23 AM) Total Marks: 1
For the sieve technique we solve the problem,
Select correct option:

☐ **recursively**

☐ mathematically

☐ precisely

☐ accurately

Quiz Start Time: 07:39 AM
Time Left 9
sec(s)
Question # 2 of 10 (Start time: 07:40:32 AM) Total Marks: 1
For the heap sort, access to nodes involves simple _______________ operations.
Select correct option:

☐ arithmetic

☐ binary

☐ algebraic

☐ logarithmic

Quiz Start Time: 07:39 AM
Time Left 76
sec(s)
Question # 3 of 10 (Start time: 07:41:58 AM) Total Marks: 1
We do sorting to,
Select correct option:

☐ keep elements in random positions

☐ keep the algorithm run in linear order

☐ keep the algorithm run in (log n) order

☐ keep elements in increasing or decreasing order

Quiz Start Time: 07:39 AM
Time Left 60
sec(s)
Question # 4 of 10 (Start time: 07:42:18 AM) Total Marks: 1
One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Select correct option:

☐ pointers

☐ constants

☐ variables

Quiz Start Time: 07:39 AM
Time Left 69
sec(s)
Question # 5 of 10 (Start time: 07:42:55 AM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order

Select correct option:

☐ **heap**

☐ binary tree

☐ binary search tree

☐ array

Quiz Start Time: 07:39 AM
Time Left 47
sec(s)
Question # 6 of 10 (Start time: 07:43:24 AM) Total Marks: 1
The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

☐ arithmetic

☐ geometric

☐ **linear**

☐ orthogonal

Quiz Start Time: 07:39 AM
Time Left 43
sec(s)
Question # 7 of 10 (Start time: 07:44:11 AM) Total Marks: 1
Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct option:

☐ **n items**

☐ phases

☐ pointers

☐ constant

Quiz Start Time: 07:39 AM
Time Left 68
sec(s)
Question # 8 of 10 (Start time: 07:45:06 AM) Total Marks: 1
Divide-and-conquer as breaking the problem into a small number of
Select correct option:

☐ pivot

☐ Sieve

☐ **smaller sub problems**

☐ Selection

Quiz Start Time: 07:39 AM
Time Left 57

sec(s)
Question # 9 of 10 (Start time: 07:45:36 AM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:

☐ **True**

☐ False

Quiz Start Time: 07:39 AM
Time Left 24
sec(s)
Question # 10 of 10 (Start time: 07:46:17 AM) Total Marks: 1
How much time merge sort takes for an array of numbers?
Select correct option:

☐ T(n^2)

☐ T(n)

☐ T(log n)

☐ **T(n log n)**

Quiz Start Time: 07:48 AM
sec(s)
Question # 1 of 10 (Start time: 07:48:31 AM) Total Marks: 1
For the heap sort we store the tree nodes in
Select correct option:

☐ **level-order traversal**

☐ in-order traversal

☐ pre-order traversal

☐ post-order traversal

Quiz Start Time: 07:48 AM
Time Left 85
sec(s)
Question # 2 of 10 (Start time: 07:48:53 AM) Total Marks: 1
One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Select correct option:

☐ **pointers**

☐ constants

☐ variables

☐ functions

Quiz Start Time: 07:48 AM
Time Left 41
sec(s)
Question # 3 of 10 (Start time: 07:49:03 AM) Total Marks: 1

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct option:

☐ upper

☐ **lower**

☐ average

☐ log n

Quiz Start Time: 07:48 AM
Time Left 87
sec(s)
Question # 4 of 10 (Start time: 07:49:59 AM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

☐ **heap**

☐ binary tree

☐ binary search tree

☐ array

Quiz Start Time: 07:48 AM
Time Left 86
sec(s)
Question # 5 of 10 (Start time: 07:50:09 AM) Total Marks: 1
Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct option:

☐ **n items**

☐ phases

☐ pointers

☐ constant

Quiz Start Time: 07:48 AM
Time Left 86
sec(s)
Question # 6 of 10 (Start time: 07:50:20 AM) Total Marks: 1
How much time merge sort takes for an array of numbers?
Select correct option:

☐ T(n^2)

☐ T(n)

☐ T(log n)

☐ **T(n log n)**

Quiz Start Time: 07:48 AM
Time Left 73
sec(s)
Question # 7 of 10 (Start time: 07:50:36 AM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ____________
Select correct option:

☐ increasing order only

☐ decreasing order only

☐ **heap order**

☐ (log n) order

Quiz Start Time: 07:48 AM
Time Left 62
sec(s)
Question # 8 of 10 (Start time: 07:51:04 AM) Total Marks: 1
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:

☐ T(n)

☐ T(n / 2)

☐ **log n**

☐ ________n / 2 + n / 4

Quiz Start Time: 07:48 AM
Time Left 61
sec(s)
Question # 9 of 10 (Start time: 07:51:41 AM) Total Marks: 1
The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:

☐ **divide-and-conquer**

☐ decrease and conquer

☐ greedy nature

☐ 2-dimension Maxima

Quiz Start Time: 07:48 AM
Time Left 83
sec(s)
Question # 10 of 10 (Start time: 07:52:17 AM) Total Marks: 1
The analysis of Selection algorithm shows the total running time is indeed _________in n,
Select correct option:

☐ arithmetic

☐ geometric

☐ linear

☐ orthogonal

Quiz Start Time: 07:53 AM
Time Left 54
sec(s)
Question # 1 of 10 (Start time: 07:53:11 AM) Total Marks: 1
The sieve technique works in ____________ as follows
Select correct option:

☐ phases

☐ numbers

☐ integers

☐ routines

Quiz Start Time: 07:53 AM
Time Left 86
sec(s)
Question # 2 of 10 (Start time: 07:53:53 AM) Total Marks: 1
Sorting is one of the few problems where provable _________ bonds exits on how fast we can sort,
Select correct option:

☐ upper

☐ lower

☐ average

☐ log n

Quiz Start Time: 07:53 AM
Time Left 81
sec(s)
Question # 3 of 10 (Start time: 07:54:01 AM) Total Marks: 1
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:

☐ T(n)

☐ log n

☐ n / 2 + n / 4

Quiz Start Time: 07:53 AM
Time Left 24
sec(s)
Question # 4 of 10 (Start time: 07:54:16 AM) Total Marks: 1
For the Sieve Technique we take time
Select correct option:

☐ **T(nk)**

☐ T(n / 3)

☐ n^2

☐ n/3

Quiz Start Time: 07:53 AM
Time Left 87
sec(s)
Question # 5 of 10 (Start time: 07:55:31 AM) Total Marks: 1
A (an) __________ is a left-complete binary tree that conforms to the heap order
Select correct option:

☐ **heap**

☐ binary tree

☐ binary search tree

☐ array

Quiz Start Time: 07:53 AM
Time Left 86
sec(s)
Question # 6 of 10 (Start time: 07:55:40 AM) Total Marks: 1
For the heap sort we store the tree nodes in
Select correct option:

☐ **level-order traversal**

☐ in-order traversal

☐ pre-order traversal

☐ post-order traversal

Quiz Start Time: 07:53 AM
Time Left 58
sec(s)
Question # 7 of 10 (Start time: 07:55:51 AM) Total Marks: 1
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _________________ series in the analysis,
Select correct option:

☐ linear

☐ arithmetic

☐ **geometric**

☐ exponent

Quiz Start Time: 07:53 AM
Time Left 85

sec(s)
Question # 8 of 10 (Start time: 07:56:30 AM) Total Marks: 1
One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Select correct option:

☐ **pointers**

☐ constants

☐ variables

☐ functions

Quiz Start Time: 07:53 AM
Time Left 12
sec(s)
Question # 9 of 10 (Start time: 07:56:41 AM) Total Marks: 1
Analysis of Selection algorithm ends up with,
Select correct option:

☐ **T(n)**

☐ T(1 / 1 + n)

☐ T(n / 2)

☐ T((n / 2) + n)

Quiz Start Time: 07:53 AM
Time Left 76
sec(s)
Question # 10 of 10 (Start time: 07:58:12 AM) Total Marks: 1
The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

☐ arithmetic

☐ geometric

☐ **linear**

☐ orthogonal

Question No: 1 (Marks: 1) - Please choose one
An optimization problem is one in which you want to find,
► Not a solution
► An algorithm
► Good solution
► The best solution

Question No: 2 (Marks: 1) - Please choose one
Although it requires more complicated data structures, Prim's algorithm for a minimum spanning tree is better than Kruskal's when the graph has a large number of vertices.

► True
► False

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

If a problem is in NP, it must also be in P.
► True
► False
► unknown

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

What is generally true of Adjacency List and Adjacency Matrix representations of graphs?
► *Lists* require less space than *matrices* but take longer to find the weight of an edge (v1,v2)
► *Lists* require less space than *matrices* and they are faster to find the weight of an edge (v1,v2)
► *Lists* require more space than *matrices* and they take longer to find the weight of an edge (v1,v2)
► *Lists* require more space than *matrices* but are faster to find the weight of an edge (v1,v2)

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

If a graph has v vertices and e edges then to obtain a spanning tree we have to delete
► v edges.
► v – e + 5 edges
► v + e edges.
► None of these

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

Maximum number of vertices in a Directed Graph may be $|V_2|$
► True
► False

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

The Huffman algorithm finds a (n) _____________ solution.
► Optimal
► Non-optimal
► Exponential
► Polynomial

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

The Huffman algorithm finds an exponential solution
► True
► False

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

The Huffman algorithm finds a polynomial solution
► True
► False

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

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

► True
► False
Question No: 11 (Marks: 1) - Please choose one
The codeword assigned to characters by the Huffman algorithm have the property that no codeword is the postfix of any other.
► True
► False
Question No: 12 (Marks: 1) - Please choose one
Huffman algorithm uses a greedy approach to generate a postfix code T that minimizes the expected length B (T) of the encoded string.
► True
► False
Question No: 13 (Marks: 1) - Please choose one
Shortest path problems can be solved efficiently by modeling the road map as a graph.
► True
► False
Question No: 14 (Marks: 1) - Please choose one
Dijkestra's single source shortest path algorithm works if all edges weights are non-negative and there are negative cost cycles.
► True
► False
Question No: 15 (Marks: 1) - Please choose one
Bellman-Ford allows negative weights edges and negative cost cycles.
► True
► False
Question No: 16 (Marks: 1) - Please choose one
The term "coloring" came form the original application which was in architectural design.
► True
► False
Question No: 17 (Marks: 1) - Please choose one
In the clique cover problem, for two vertices to be in the same group, they must be adjacent to each other.
► True
► False
Question No: 18 (Marks: 1) - Please choose one
Dijkstra's algorithm is operates by maintaining a subset of vertices
► True
► False
Question No: 19 (Marks: 1) - Please choose one
The difference between Prim's algorithm and Dijkstra's algorithm is that Dijkstra's algorithm uses a different key.
► True
► False
Question No: 20 (Marks: 1) - Please choose one

Consider the following adjacency list:
Which of the following graph(s) describe(s) the above adjacency list?
►
►
►
►
Question No: 21 (Marks: 1) - Please choose one
We do sorting to,
► keep elements in random positions
► keep the algorithm run in linear order
► keep the algorithm run in (log n) order
► keep elements in increasing or decreasing order
Question No: 22 (Marks: 1) - Please choose one
After partitioning array in Quick sort, pivot is placed in a position such that
► Values smaller than pivot are on left and larger than pivot are on right
► Values larger than pivot are on left and smaller than pivot are on right
► Pivot is the first element of array
► Pivot is the last element of array
Question No: 23 (Marks: 1) - Please choose one
Merge sort is stable sort, but not an in-place algorithm

► True
► False
Question No: 24 (Marks: 1) - Please choose one
In counting sort, once we know the ranks, we simply _________ numbers to their final positions in an output array.
► Delete
► copy
► Mark
► arrange
Question No: 25 (Marks: 1) - Please choose one
Dynamic programming algorithms need to store the results of intermediate sub-problems.
► True
► False
Question No: 26 (Marks: 1) - Please choose one
A p × q matrix A can be multiplied with a q × r matrix B. The result will be a p × r matrix C. There are (p . r) total entries in C and each takes _________ to compute.
► O (q)
► O (1)
► O (n^2)
► O (n^3)
Quiz Start Time: 06:18 PM Time Left 55

sec(s)
Question # 1 of 10 (Start time: 06:18:58 PM) Total Marks: 1
We do sorting to,
Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order
Quiz Start Time: 06:18 PM Time Left 62
sec(s)
Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes
tree leaves
Quiz Start Time: 06:18 PM Time Left 77
sec(s)
Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1
Sieve Technique can be applied to selection problem?
Select correct option:
True
False
Quiz Start Time: 06:18 PM Time Left 74
sec(s)
Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ___________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order
Quiz Start Time: 06:18 PM Time Left 77
sec(s)
Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array
Quiz Start Time: 06:18 PM Time Left 72
sec(s)
Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1

Divide-and-conquer as breaking the problem into a small number of
Select correct option:
pivot
Sieve
smaller sub problems
Selection
Quiz Start Time: 06:18 PM Time Left 48
sec(s)
Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:
True
False
Quiz Start Time: 06:18 PM Time Left 34
sec(s)
Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1
The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:
16
10
32
31 (yeh just tukka hai)
Quiz Start Time: 06:18 PM Time Left 36
sec(s)
Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent ________________ series in the analysis,
Select correct option:
linear
arithmetic
geometric (yeh b gup hi lugti hai)
exponent
Quiz Start Time: 06:18 PM Time Left 76
sec(s)
Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1
For the heap sort, access to nodes involves simple ________________ operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic (bongi hai...)
Quiz Start Time: 06:18 PM Time Left 55
sec(s)

Question # 1 of 10 (Start time: 06:18:58 PM) Total Marks: 1
We do sorting to,
Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order
Start Time: 06:18 PM Time Left 62
sec(s)
Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the _____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes
tree leaves

Quiz Start Time: 06:18 PM Time Left 77
sec(s)
Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1
Sieve Technique can be applied to selection problem?
Select correct option:
True
False
Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ____________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order
MC090406557 : Nadia Parveen
Quiz Start Time: 06:18 PM Time Left 77
sec(s)
Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1
A (an) __________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array
Quiz Start Time: 06:18 PM Time Left 72
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Selection
Quiz Start Time: 06:18 PM Time Left 48
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Select correct option:
True
False
Quiz Start Time: 06:18 PM Time Left 34
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Select correct option:
16
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Select correct option:
linear
arithmetic
geometric
exponent
Quiz Start Time: 06:18 PM Time Left 76
sec(s)
Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1
For the heap sort, access to nodes involves simple ________________ operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic
Question # 1 of 10 (Start time: 10:02:41 PM) Total Marks: 1
For the sieve technique we solve the problem,

Select correct option:
recursively
mathematically
precisely
accurately
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines
Slow sorting algorithms run in,
Select correct option:
T(n^2)
T(n)
T(log n)
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic
geometric
exponent
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4
The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few
In which order we can sort?
Select correct option:

increasing order only
decreasing order only
increasing order or decreasing order
both at the same time
The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:
16
10
32
31
Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)
Last message received on 10/13 at 12:43 AM
Khanjee: We do sorting to,
Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order
Khanjee: Divide-and-conquer as breaking the problem into a small number of
Select correct option:
pivot
Sieve
smaller sub problems
Selection
The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:
arithmetic
geometric
linear
orthogonal
How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements
Sieve Technique can be applied to selection problem?

Select correct option:
True
For the heap sort we store the tree nodes in
Select correct option:
level-order traversal
in-order traversal
pre-order traversal
post-order traversal
Question No: 1 (Marks: 1) - Please choose one
Random access machine or RAM is a/an
► Machine build by Al-Khwarizmi
► Mechanical machine
► Electronics machine
► Mathematical model
Question No: 2 (Marks: 1) - Please choose one
_______________ is a graphical representation of an algorithm
► □ notation
► □ notation
► Flowchart
► Asymptotic notation
Question No: 3 (Marks: 1) - Please choose one
A RAM is an idealized machine with ______________ random-access memory.
► 256MB
► 512MB
► an infinitely large
► 100GB
Question No: 4 (Marks: 1) - Please choose one
What type of instructions Random Access Machine (RAM) can execute? Choose best answer
► Algebraic and logic
► Geometric and arithmetic
► Arithmetic and logic
► Parallel and recursive
Question No: 5 (Marks: 1) - Please choose one
What will be the total number of max comparisons if we run brute-force maxima algorithm with n elements? http://vustudents.ning.com
► n^2
► $\frac{n^2}{n}$
► n
► n^8
Question No: 6 (Marks: 1) - Please choose one
What is the solution to the recurrence $T(n) = T(n/2)+n$.
http://vustudents.ning.com
► $O(\log n)$

► ***O*(*n*)**
► *O*(*n*log*n*)
► *O*(n^2)
Question No: 7 (Marks: 1) - Please choose one
Consider the following code:

```
For(j=1; j<n;j++)
For(k=1; k<15;k++)
For(l=5; l<n; l++)
{
Do_something_constant();
}
```

What is the order of execution for this code.
► **O(*n*)**
► O(n^3)
► O(n^2 log *n*)
► O(n^2)
Question No: 8 (Marks: 1) - Please choose one
Consider the following Algorithm:

```
Factorial (n){
if (n=1)
return 1
else
return (n * Factorial(n-1))
{
```

Recurrence for the following algorithm is:
► T(n) = T(n-1) +1
► T(n) = nT(n-1) +1
► T(n)= T(n-1) +n
► **T(n)=T(n(n-1)) +1**
Question No: 9 (Marks: 1) - Please choose one
What is the total time to heapify?
► **O(log n)**
► O(n log n)
► O(n^2 log n)
► O($\log^2$ n)
Question No: 10 (Marks: 1) - Please choose one
When we call heapify then at each level the comparison performed takes time
► **It will take Θ (1)**
► Time will vary according to the nature of input data
► It can not be predicted
► It will take Θ (log n)
Question No: 11 (Marks: 1) - Please choose one
In Quick sort, we don't have the control over the sizes of recursive calls
► **True**
► False
► Less information to decide

► Either true or false

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

Is it possible to sort without making comparisons?

► Yes

► No

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

If there are Θ (n^2) entries in edit distance matrix then the total running time is

► Θ (1)

► Θ (n^2)

► Θ (n)

► Θ (n log n)

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

For Chain Matrix Multiplication we can not use divide and conquer approach because,

► We do not know the optimum k

► We use divide and conquer for sorting only

► We can easily perform it in linear time

► Size of data is not given

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

The Knapsack problem belongs to the domain of _______________ problems.

► Optimization

► NP Complete

► Linear Solution

► Sorting

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

Suppose we have three items as shown in the following table, and suppose the capacity of the knapsack is 50 i.e. W = 50.

Item Value Weight

1 60 10

2 100 20

3 120 30

The optimal solution is to pick

► Items 1 and 2

► Items 1 and 3

► Items 2 and 3

► None of these

Question No: 17 (Marks: 2)

Describe an efficient algorithm to find the ***median*** of a set of 10^6 integers; it is known that there are fewer than 100 distinct integers in the set

File Version Update: (Dated: 28-Nov-2011)

- MCQs GIGA File (Done)

6. **My Composed MCQs from Lecture 1_to12 Included**

Current paper of Cs502 Fall 2011

28 november 2011

Mcqs past paper men say koi aik 2 hi tha bs

20 MCQs most about running time and worst case time of algorithms.

8. Worst case for edit distance algorithm? What is the simple change that can change the worst case time ? 5 marks
9. Write Pseudo code for KNAPSACK algorithm? 5 marks
10. Spelling correction in edit distance? 3 marks
11. Differentiate b/w Bubble sort, insertion sort and selection sort? 7.marks
9. Average case and worst case time for quick sort? 2 marks

Another Paper,

9. Suggest and describe modifications of the implementation of quick sort that will improve its performance. (05 marks)
10. Complete given cost table. (05 marks)
11. Why do we analyze the average case performance of a randomized algorithm and not its worse case performance. (03 marks)
12. Why value in row of a dynamic programming table of knapsack is always non-decreasing? (03 marks)
13. How we build heap? (02 marks)
14. Find cost of (A1(A2A3)). (02 marks)

Table of Content

==>=======

MCQz

MCQz (Set-1) From Lecture 1 to 12

This is my Own Compilation from Handouts………(Author: Muhammad Ishfaq)

Questions

Question No: 1 The word Algorithm comes from the name of the muslim author ________________

9. Ibne-ul Hasem
10. **Abu Ja'far Mohammad ibn Musa al-Khowarizmi**
11. Jaber Bin Hayan
12. None

Correct Option : **B**

Question No: **2** Abu Ja'far Mohammad ibn Musa al-Khowarizmi was born in the eighth century at Khwarizm (Kheva), in_______________

A. Iraq

B. **Uzbekistan**

C. Turkey

Correct Option : **B**

Question No: **3** Al-Khwarizmi died _________ C.E.___

A. around 900

B. around 700

C. **around 840**

Correct Option : **C**

Question No: **4** Al-Khwarizmi's work was written in a book titled al Kitab al-mukhatasar fi hisab al-jabr wa'l-muqabalah (The Compendious Book on Calculation by Completion and Balancing)___

A. **True**

. False

Correct Option : **A**

Question No: **5** An _________ is thus a sequence of computational steps that transform the input into output.___

A. Data Structure

B. Data Process

C. **Algorithm**

D. none

Correct Option : **C**
Question No: **6** Like a program, an algorithm is a mathematical entity, which is not independent of a specific programming language, machine, or compiler.___

A. True

B. **False**

Correct Option : **B**
Question No: **7** ________ of the courses in the computer science program deal with efficient algorithms and data structures,___

A. None

B. **Many**

C. Some

Correct Option : **B**
Question No: **8** Compilers, operating systems, databases, artificial intelligence, computer graphics and vision, etc. use algorithm.____________

A. False

B. **True**

Correct Option : **B**
Question No: **9** This course will consist of following major section(s). Select Correct Option

1.The first is on the mathematical tools necessary for the analysis of algorithms. This will focus on asymptotics, summations, recurrences.

2- The second element will deal with one particularly important algorithmic problem: sorting a list of numbers.

3-The third of the course will deal with a collection of various algorithmic problems and solution techniques.

4- Finally we will close this last third with a very brief introduction to the theory of NP-completeness.

A. 1-2

B. 1-2-3

C. 1-3-4

8. **All**

Correct Option : D

Question No: 10 NP-complete problem are those for which ______ algorithms are known, but no one knows for sure whether efficient solutions might exist___

9. efficient
10. **no efficient**
11. none

Correct Option : B

Question No: 11 Analyzig algorithms in terms of the amount of computational resources that the algorithm requires. These resources include mostly _____________

9. running time
10. memory
11. **running time and memory**
12. none

Correct Option : C

Question No: 12 Ideally this model should be a reasonable abstraction of a standard generic single-processor machine. We call this model _____.

8. RAM Memory

ROM Memory

random access machine or RAM

Correct Option : C

Question No: 13 A RAM is an idealized machine with___

A. an infinitely large random-access memory.

B. with Instructions are executed one-by-one (there is no parallelism)

C. single processor machine

D. **all**

Correct Option : D

Question No: 14 We assume that in RAM machine , each basic operation takes the ________ constant time to execut.

A. **same**

B. different

Correct Option : A

Question No: 15 A point p in 2-dimensional space be given by its integer coordinates, p = (p.x, p.y).___

A. **true**

B. false

Correct Option : A

Question No: 16 A point p is not said to be dominated by point q if q.x ≤ p.x and q.y ≤ p.y.___

A. **true**

B. false

Correct Option : A

Question No: 17 Given a set of n points, P = {p1, p2, . . . , pn} in 2-space a point is said to be _________ if it is not dominated by any other point in P.

A. **maximal**

B. mininal

C. average

Correct Option : A

Question No: 18 Brute-force algorithm is defined as ,It is a very general problem-solving technique that consists of systematically enumerating all possible candidates for the solution and checking whether each candidate satisfies the problem's statement.s

___

A. false

B. **true**

Correct Option : B

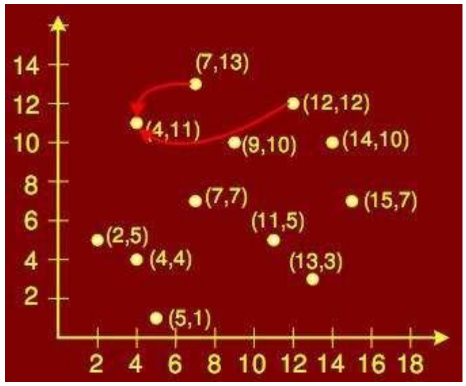
Question No: 19 There are no formal rules to the syntax of the pseudo code.___

A. **true**

B. false

Correct Option : A

Question No: 20 From the figure select the correct statement.___



A. Point (4,11) dominate (7, 7)

B. Point (7,13) dominate (9.10)

C. **Point (7,13) dominate (7, 7)**

D. Point (13,3) dominate (9,10)

Correct Option : **C**

Question No: 21 Worst-case time is the maximum running time over all (legal) inputs of size n is given in figure where I denote an input instance, let |I| denote its length, and let T(I) denote the running time of the algorithm on input I.___

$$T_{worst}(n) = \max_{|I|=n} T(I)$$

A. false

B. **true**

Correct Option : **B**

Question No: 22 ______________ is the average running time over all inputs of size n. Let p(I) denote the probability of seeing this input. The average-case time is the weighted sum of running times with weights.___

$$T_{worst}(n) = \max_{|I|=n} T(I)$$

A. Worst-case time

B. **Average-case time**

C. none

Correct Option : **B**

Question No: 23 When n is large, n^2 term will be much larger than the n term and will dominate the running time.___

A. **true**

B. false

Correct Option : **A**

Question No: **24** We will say that the worst-case running time is Θ(n^2). This is called ________________

A. the asymptotic growth rate of the function.

B. itteration growth rate of the function.

C. recursive growth rate of the function.

D. none

Correct Option : **A**

Question No: **25** Given a finite sequence of values a1, a2, . . . , an, their sum a1 + a2 + . . . + an is expressed in summation notation as (click figure to see)___

$$\sum_{i=1}^{n} a_i$$

A. **true**

B. false

Correct Option : **A**

Question No: **26** If c is a constant then (see figure..)___

$$\sum_{i=1}^{n} ca_i = c\sum_{i=1}^{n} a_i$$

$$\sum_{i=1}^{n} (a_i + b_i) = \sum_{i=1}^{n} a_i + \sum_{i=1}^{n} b_i$$

A **true**

B. false

Correct Option : **A**

Question No: **27** Formule in figure is___

$$\sum_{i=1}^{n} (a_i + b_i) = \sum_{i=1}^{n} a_i + \sum_{i=1}^{n} b_i$$

A. **correct**

B. wrong

Correct Option : **A**

Question No: **28** Figure shows ___

$$\sum_{i=1}^{n} i = 1 + 2 + \ldots + n$$

$$= \frac{n(n+1)}{2} = \Theta(n^2)$$

A. **Arithmetic series**

B. HArmonic series

C. Geometric series

D. none

Correct Option : **A**

Question No: **29** Figure shows,___

$$\sum_{i=1}^{n} i^2 = 1 + 4 + 9 + \ldots + n^2$$
$$= \frac{2n^3 + 3n^2 + n}{6} = \Theta(n^3)$$

A. Arithmatic series

B. **Quadratic series**

C. Harmonic series

D. Geometric series

Correct Option : **B**

Question No: **30** Figure shows .... and If 0 < x < 1 then this is Θ(1), and if x > 1, then this is Θ(x^n).___

$$\sum_{i=1}^{n} x^i = 1 + x + x^2 + \ldots + x^n$$
$$= \frac{x^{(n+1)} - 1}{x - 1} = \Theta(n^2)$$

A. Quadratic series

B. Arithmatic series

C. **Geometric series**

D. Harmonic series

Correct Option : **C**

Question No: **31** For n ≥ 0 , figure shows ...___

$$H_n = \sum_{i=1}^{n} \frac{1}{i}$$
$$= 1 + \frac{1}{2} + \frac{1}{3} + \ldots + \frac{1}{n} \approx \ln n$$
$$= \Theta(\ln n)$$

A. Geometric series

B. Quadratic series

C. Arithmetic series

D. **Harmonic series**

Correct Option : **D**

Question No: **32** We write out the loops as summations and then solve the summations. ___

A. **true**

B. false

Correct Option : A

Question No: 33 A point p is said to dominated by point q if p.x ≤ q.x and p.y ≤ q.y___

A. **true**

B. false

Correct Option : A

Question No: 34 We introduced a brute-force algorithm that ran in _________

A. Θ(n) time

B. **Θ(n^2) time**

C. Θ(nlogn) time

D. Θ(n^3) time

Correct Option : B

Question No: 35 The problem with the brute-force algorithm is that it uses ________ in pruning out decisions.___

A. intelligence

B. **no intelligence**

Correct Option : B

Question No: 36 This follows from the fact that dominance relation is ____________

A. symmetric.

B. **transitive.**

C. non-transitive.

Correct Option : B

Question No: 37 This approach of solving geometric problems by sweeping a line across the plane is called ___________

A. **plane sweep.**

B. brute force.

Correct Option : A

Question No: 38 Sorting takes ___________ time.___

A. Θ(n)

B. Θ(n^2)

C. **Θ(n log n)**

D. none

Correct Option : C

Question No: 39 Plane-sweep Algorithm, the inner while-loop _______ execute more than n times over the entire course of the algorithm.___

A. can

B. **cannot**

Correct Option : B

Question No: 40 The runtime of entire plane-sweep algorithm is Θ(n log n)___

A. **true**

B. false

Correct Option : A

Question No: 41 For n = 1, 000, 000, if plane-sweep takes 1 second, the brute-force will take about ___

A. 14 hours

B. 14 minutes

Correct Option : A

Question No: 42 If n is not very large, then almost any algorithm _____ be fast.___

A. may

B. may be not

C. **will**

D. none

Correct Option : C

Question No: 43 Given any function g(n), we define Θ(g(n)) to be a set of functions that asymptotically equivalent to g(n). Formally:___

$$\Theta(g(n)) = \{f(n) \mid \text{there exist positive constants } c_1, c_2 \text{ and } n_0 \text{ such that } 0 \le c_1 g(n) \le f(n) \le c_2 g(n) \text{ for all } n \ge n_0\}$$

A. **true**

B. false

Correct Option : A

Question No: 44 This is written as "f(n) E Θ(g(n))" That is, f(n) and g(n) are asymptotically equivalent. This means that they have essentially the _______ growth rates for large n. ___

A. different

B. **same**

Correct Option : B

Question No: 45 All given function are all asymptotically equivalent. As n becomes large, the dominant (fastest growing) term is some constant times n^2.___

- $4n^2$,
- $(8n^2 + 2n - 3)$,
- $(n^2/5 + \sqrt{n} - 10 \log n)$
- $n(n - 3)$

A. **true**

B. false

Correct Option : A

Question No: 46 Lower bound f(n) = 8n2 + 2n − 3 grows asymptotically at least as fast as n^2,___

A. **true**

B. false

Correct Option : A

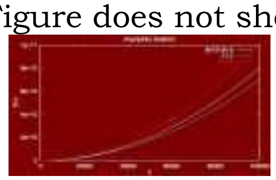
Question No: 47 Upper bound f(n) grows no faster asymptotically than n^2,___

A. **true**

B. false

Correct Option : A

Question No: 48 Figure does not show Asymptotic Notation Example___



A. true

B. **false**

Correct Option : B

Question No: 49 The ____________ is used to state only the asymptotic upper bounds.___

$$O(g(n)) = \{f(n) \mid \text{there exist positive constants } c \text{ and } n_0 \text{ such that } 0 \le f(n) \le cg(n) \text{ for all } n \ge n_0\}$$

A. theta notation

B. **O-notation**

C. Ω-notation

Correct Option : **B**

Question No: 50 The ________allows us to state only the asymptotic lower bounds.___

$\Omega(g(n)) = \{f(n) \mid$ there exist positive constants c and n_0 such that $0 \le cg(n) \le f(n)$ for all $n \ge n_0\}$

A. **Ω-notation**

B. O-notation

Correct Option : **A**

Question No: 51 The three notations:

___

$\Theta(g(n)) :\ 0 \le c_1 g(n) \le f(n) \le c_2 g(n)$

$O(g(n)) :\ 0 \le f(n) \le cg(n)$

$\Omega(g(n)) :\ 0 \le cg(n) \le f(n)$

for all $n \ge n_0$

A. **true**

B. false

Correct Option : **A**

Question No: 52 Limit rule for Θ-notation:___

$$\lim_{n\to\infty} \frac{f(n)}{g(n)} = c,$$

A. **true**

B. false

Correct Option : **A**

Question No: 53 The limit rule for O-notation is ___

$$\lim_{n\to\infty} \frac{f(n)}{g(n)} = c,$$

A. **true**

B. false

Correct Option : **A**

Question No: 54 limit rule for Ω-notation:___

$$\lim_{n\to\infty} \frac{f(n)}{g(n)} \neq 0,$$

A. **true**

B. false

Correct Option : A

Question No: 55 Here is a list of common asymptotic running times:

- Θ(1): Constant time; can't beat it!
- Θ(log n): Inserting into a balanced binary tree; time to find an item in a sorted array of length n using binary search.
- Θ(n): About the fastest that an algorithm can run.
- Θ(n log n): Best sorting algorithms.
- Θ(n2), Θ(n3): Polynomial time. These running times are acceptable when the exponent of n is small or n is not to large, e.g., n ≤ 1000.
- Θ(2n), Θ(3n): Exponential time. Acceptable only if n is small, e.g., n ≤ 50.
- Θ(n!), Θ(nn): Acceptable only for really small n, e.g. n ≤ 20___

A. **true**

B. false

Correct Option : A

Question No: 56 Ancient Roman politicians followed an important principle of good algorithm design known as Divide and Conquer Strategy.___

A. **true**

B. false

Correct Option : A

Question No: 57 The main elements to a divide-and-conquer solution are___

A. Divide: the problem into a small number of pieces

B. Conquer: solve each piece by applying divide and conquer to it recursively

C. Combine: the pieces together into a global solution

D. **All of the above.**

Correct Option : D

Question No: 58 The merge sort algorithm works by ________

A. (Divide:) split A down the middle into two subsequences, each of size roughly n/2

B. (Conquer:) sort each subsequence by calling merge sort recursively on each.

C. (Combine:) merge the two sorted subsequences into a single sorted list.

D. **All of the above.**

Correct Option : **D**

Question No: **59** MERGE-SORT(array A, int p, int r)
1 if (p < r)
2 then
3 q ← (p + r)/2
4 MERGE-SORT(A, p, q) // sort A[p..q]
5 MERGE-SORT(A, q + 1, r) // sort A[q + 1..r]
6 MERGE(A, p, q, r) // merge the two pieces___

A. **true**

B. false

Correct Option : **A**

Question No: **60** The iteration method does not turn the recurrence into a summation___

$$T(n) = \begin{cases} 1 & \text{if } n = 1, \\ T(\lceil n/2 \rceil) + T(\lfloor n/2 \rfloor) + n & \text{otherwise} \end{cases}$$

A. **false**

B. true

Correct Option : **A**

Question No: **61** Define the ______ of an element to be one plus the number of elements that are smaller. ___

A. **Rank**

B. Degree

Correct Option : **A**

Question No: **62** Thus, the rank of an element is its final position if the set is

A. **sorted**.

B. unsorted.

C. unchanged.

D. same

Correct Option : **A**

Question No: **63** The minimum is of rank ____ and the maximum is of rank

___.___

A. 0 , 1

B. 0 , n

C. **1 , n**

D. none

Correct Option : **C**

Question No: **64** Test___

A. Choice 1

B. Choice 2

C. Choice 3

D. **None**

Correct Option : **D**

Question No: **65** Floor and ceilings ________ a pain to deal with.___

A. are not

B. **are**

C. sometime

D. none

Correct Option : **B**

Question No: **66** Iteration _______ powerful technique for solving recurrences___

A. is a not a

B. might be

C. **is a very**

Correct Option : **C**

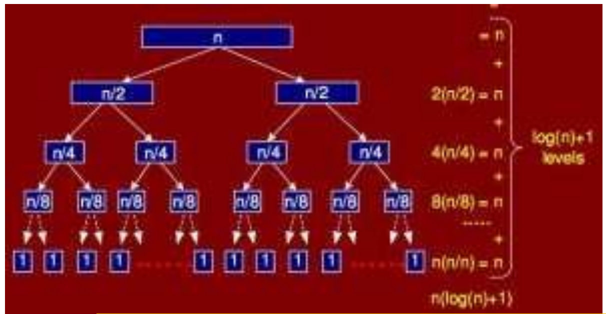
Question No: **67** Merge of two lists of size m/2 to a list of size m takes Θ(m) time, which we will just write as m.___

A. True

B. False

Correct Option : **A**

Question No: **68** The figure is a___



A. **Selection sort Recurrence Tree**

B. Merge sort Recurrence Tree

C. Both

D. None

Correct Option : **A**

Question No: **69** Define the ______ of an element to be one plus the number of elements that are smaller.___

A. degree

B. **rank**

C. frequency

D. weight

Correct Option : **B**

Question No: **70** The rank of an element is its final position if the set is sorted___

A. **true**

B. false

Correct Option : **A**

Question No: **71** Consider the set: {5, 7, 2, 10, 8, 15, 21, 37, 41}. The rank of each number is its position in the sorted order.

For example, rank of 8 is ______ , one plus the number of elements ________ 8 which is 3___

position	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Number	2	5	7	8	10	15	21	37	41

A. 3 , equal to

B. 4 , greater then

C. 3 , smaller then

D. **4 , smaller then**

Correct Option : **D**

Question No: **72** Given a set A of n distinct numbers and an integer k, 1 ≤ k ≤ n, output the element of A of rank k.This problem is of type ______________

A. Merge Sort

B. **Selection Sort**

C. Maximal

Correct Option : **B**

Question No: **73** If n is odd then the median is defined to be element of rank ______.___

A. n

B. n-1

C. **(n+1)/2**

D. n/2

Correct Option : **C**

Question No: **74** When n is even, for median , there are two choices: ___

A. n/2

B. (n + 1)/2

C. **n/2 and (n + 1)/2.**

D. none

Correct Option : **C**

Question No: **75** Medians are useful as a measures of the ____________ of a set

A. mode

B. average

C. probability

D. **central tendency**

Correct Option : **D**

Question No: **76** Central tendency of a set is useful when the distribution of values is __________.___

A. skewed

B. not skewed

C. **highly skewed**

D. straight

Correct Option : C

Question No: 77 The median income in a community is a more meaningful measure than average. Suppose 7 households have monthly incomes 5000, 7000, 2000, 10000, 8000, 15000 and 16000. In sorted order, the incomes are 2000, 5000, 7000, 8000, 10000, 15000, 16000. The median income is 8000; median is element with rank 4: (7 + 1)/2 = 4. The average income is 9000. Suppose the income 16000 goes up to 450,000. The median is still 8000 but the average goes up to 71,000. Clearly, the average is not a good representative of the majority income levels.___

A. **Above statement is true**

B. Above statement is false

Correct Option : A

Question No: 78 Sorting requires _________ time___

A. $\Theta(\log n)$

B. Θ(n*2 log n)

C. **$\Theta(n \log n)$**

D. $\Theta(n)$

Correct Option : C

Question No: 79 In particular, is it possible to solve the selections problem in $\Theta(n)$ time?___

A. no.

B. yes.

C. **yes. However, the solution is far from obvious**

Correct Option : C

Question No: 80 A very important special case of divide-and-conquer, which I call the sieve technique.___

A. false

B. **true**

Correct Option : B

Question No: 81 We think of divide-and-conquer as breaking the problem into a small number of bigger sub-problems, which are then solved recursively.___

A. **true**

B. false

Correct Option : **A**

Question No: **82** The sieve technique is a special case, where the number of sub-problems is _____ .___

A. 3

B. 2

C. **just 1**

D. 0

Correct Option : **C**

Question No: **83** In particular "large enough" means that the number of items is at least some fixed constant fraction of n (e.g. n/2, n/3). ___

A. **true**

B. false

Correct Option : **A**

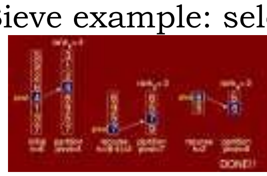
Question No: **84** The following figure shows a partitioned array:___

A. **true**

B. false

Correct Option : **A**

Question No: **85** Sieve example: select 6th smallest element is shown in fig___



A. **true**

B. false

Correct Option : **A**

Question No: **86** Ideally, x (pivot) should have a rank that is neither too large or too small.___

A. **true**

B. false

Correct Option : **A**

Question No: 87 In sorting, we are given an array A[1..n] of n numbers We are to reorder these elements into increasing (or decreasing) order.___

A. false

B. **true**

Correct Option : **B**

Question No: 88 More generally, A is an array of objects and we sort them based on one of the attributes - the key value.___

A. **true**

B. false

Correct Option : **A**

Question No: 89 There are a number of well-known _________ O(n^2) sorting algorithms.___

A. fast

B. **slow**

Correct Option : **B**

Question No: 90 Scan the array. Whenever two consecutive items are found that are out of order, swap them. Repeat until all consecutive items are in order. It is called ______________

A. Insertion sort

B. **Bubble sort**

C. Selection sort

D. none

Correct Option : **B**

Question No: 91 Assume that A[1..i − 1] have already been sorted. Insert A[i] into its proper position in this sub array. Create this position by shifting all larger elements to the right.It is called

____

A. Bubble sort

B. Selection sort

C. Merge sort

D. **none**

Correct Option : **D**

Question No: 92 Assume that A[1..i − 1] contain the i − 1 smallest elements in sorted order. Find the smallest element in A[i..n] Swap it with

A[i].It is called ____________

A. **Selection sort**

B. Insertion sort

C. Merge sort

D. Bubble sort

Correct Option : A

Question No: 93 Assume that A[1..i − 1] have already been sorted. Insert A[i] into its proper position in this sub array. Create this position by shifting all larger elements to the right.___

A. Selection sort

B. Bubble sort

C. Merge sort

D. **Insertion sort**

Correct Option : D

Question No: 94 In the worst case time _________ run in Θ(n2)___

A. Bubble sort

B. Selection sort

C. Insertion sort

D. **All of the above**

Correct Option : D

Question No: 95 A __________ is a left-complete binary tree that conforms to the heap order.___

A. BST

B. AVL Tree

C. Perfect tree

D. **Heap**

Correct Option : D

Question No: 96 The heap order property stated that in a __________ , for every node X, the key in the parent is smaller than or equal to the key in X.___

A. (max) heap

B. **(min) heap**

Correct Option : **B**

Question No: **97** In a _______ heap, the parent has a key larger than or equal both of its children ___

A. **(max) heap**

B. (min) heap

Correct Option : **A**

Question No: **98** Thus the smallest key is in the root in a_________ ; in the _________the largest is in the root.___

A. max heap, min heap

B. **min heap , max heap**

C. max heap , max heap

D. min heap , min heap

Correct Option : **B**

Question No: **99** The number of nodes in a complete binary tree of height h is___

$$n = 2^0 + 2^1 + 2^2 + \cdots + 2^h = \sum_{i=0}^{h} 2^i = 2^{h+1} - 1$$

A. **true**

B. false

Correct Option : **A**

Question No: **100** h in terms of n is___

$$h = (\log(n+1)) - 1 \approx \log n \in \Theta(\log n)$$

A. **true**

B. false

Correct Option : **A**

Question No: **101** One of the clever aspects of ________ is that they can be stored in arrays without using any pointers___

A. lists

B. BST trees

C. **heaps**

Correct Option : **C**

Question No: **102** We store the tree nodes in level-order traversal in heap sort___

A. **true**

B. false

Correct Option : A

Question No: 103 Access to nodes involves simple arithmetic operations:shown in below

left(i) : returns 2i, index of left child of node i.
right(i) : returns 2i + 1, the right child.
parent(i) : returns bi/2c, the parent of i.___

A. false

B. **true**

Correct Option : B

Question No: 104 The root is at position 1 of the array.___

A. **true**

B. false

Correct Option : A

Question No: 105 There is one principal operation for maintaining the heap property.___

A. **Heapify Procedure**

B. none

Correct Option : A

Question No: 106 It is called Heapify. (In other books it is sometimes called sifting down.) ___

A. **true**

B. false

Correct Option : A

==>

MCQz (Set-2) Lecture wise MCQs

Correct Choice : 4 From Lectuer # 1

3 - ________________ is a graphical representation of an algorithm

1. Segma Notation
2. Thita Notation
3. **Flowchart**
4. Asymptotic notation

Correct Choice : 3 From Lectuer # 2

4 - What will be the total number of max comparisons if we run brute-force maxima algorithm with n elements?

1. **n^2**
2. n^n/2

3. n
4. n^8

Correct Choice : 1 From Lectuer # 3

5 - function is given like 4n^4+ 5n^3+n what is the run time of this

1. theata(n^4)

2. theata(n^3)
3. theata(4n^4+ 5n^3)
4. theata(4n^4+ 5n^3)

Correct Choice : 1 From Lectuer # 4

6 - Consider the
following code: For(j=1; j

7 - Execution of the following code
fragment int i = N; while (i > 0)
2

{ int Sum = 0; int
j; for (j = 0; j
Sum++; cout

8 - Let us say we have an algorithm that carries out N2 operations for an input of size N. Let us say that a computer takes 1 microsecond (1/1000000 second) to carry out one operation. How long does the algorithm run for an input of size 3000?

1. 90 seconds

2. 9 seconds

3. 0.9 seconds
4. 0.09 seconds

Correct Choice : 2 From Lectuer # 4

9 - The appropriate big thita classification of the given function. f(n) = 4n2 + 97n + 1000 is

1. ?(n)
2. O(2^n)

3. O(n^2)

4. O(n^2logn)

Correct Choice : 3 From Lectuer # 4

10 - The appropriate big ? classification of the given function. f(n) = 4n2 + 97n + 1000 is

1. ?(n)
2. O(2^n)

3. O(n^2)

4. O(n^2logn)

Correct Choice : 3 From Lectuer # 4

11 - Which sorting algorithm is faster

1. O (n log n)
2. O n^2

3. O (n+k)

4. O n^3

Correct Choice : 3 From Lectuer # 5

12 - If algorithm A has running time 7n^2 + 2n + 3 and algorithm B has running time 2n^2,then

1. Both have same asymptotic time complexity

2. A is asymptotically greater
3. B is asymptotically greater

4. None of others
Correct Choice : 1 From Lectuer # 6
14 - What is the solution to the recurrence T(n) = T(n/2)+n .
1. O(logn)
2. O(n)
3. O(nlogn)
4. O(n^2)
Correct Choice : 1 From Lectuer # 8
15 - How much time merge sort takes for an array of numbers?
1. (n^2)
2. T(n)
3. T(log n)
4. T(n log n)
Correct Choice : 2 From Lectuer # 8
17 - Consider the following Algorithm:
Factorial (n){ if (n=1)
return 1 else return (n *
Factorial(n-1))
} Recurrence for the following algorithm is:
1. T(n) = T(n-1) +1
2. T(n) = nT(n-1) +1
3. T(n)= T(n-1) +n
4. T(n)=T(n(n-1)) +1
Correct Choice : 4 From Lectuer # 9
18 - For the Sieve Technique we take time
1. T(nk) .
2. T(n / 3) 4
3. n^2
4. n/3
Correct Choice : 1 From Lectuer # 10
20 - Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
1. n items
2. phases
3. pointers
4. constant
Correct Choice : 1 From Lectuer # 10
22 - In Sieve Technique we do not know which item is of interest
1. FALSE
2. TRUE
3.
4.
Correct Choice : 2 From Lectuer # 10
23 - For the sieve technique we solve the problem,
1. recursively
2. mathematically
3. accurately
4. precisely
Correct Choice : 1 From Lectuer # 10

24 - For the Sieve Technique we take time

1. T(nk)

2. T(n / 3)
3. n^2
4. n/3

Correct Choice : 1 From Lectuer # 10

25 - How many elements do we eliminate in each time for the Analysis of Selection algorithm?

1. n / 2 elements
2. (n / 2) + n elements
3. n / 4 elements

4. n elements

5

Correct Choice : 4 From Lectuer # 10

26 - Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________

1. n items

2. phases
3. pointers
4. constant

Correct Choice : 1 From Lectuer # 10

27 - Sieve Technique can be applied to selection problem?

1. TRUE
2. FALSE
3.
4.

Correct Choice : 1 From Lectuer # 10

28 - The analysis of Selection algorithm shows the total running time is indeed ________in n,

1. arithmetic
2. geometric

3. linear

4. orthogonal

Correct Choice : 3 From Lectuer # 10

29 - The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,

1. divide-and-conquer

2. decrease and conquer
3. greedy nature
4. 2-dimension Maxima

Correct Choice : 1 From Lectuer # 10

30 - The sieve technique works in ___________ as follows

1. phases

2. numbers
3. integers
4. routines

Correct Choice : 1 From Lectuer # 10

31 - The sieve technique works in ___________ as follows

1. phases 6

2. numbers
3. integers
4. routines
Correct Choice : 1 From Lectuer # 10
32 - A (an) _________ is a left-complete binary tree that conforms to the heap order
1. heap
2. binary tree
3. binary search tree
4. array
Correct Choice : 1 From Lectuer # 11
34 - For the heap sort, access to nodes involves simple _______________ operations.
1. arithmetic
2. binary
3. algebraic
4. logarithmic
Correct Choice : 1 From Lectuer # 11
37 - We do sorting to,
1. keep elements in random positions
2. keep the algorithm run in linear order
3. keep the algorithm run in (log n) order
4. keep elements in increasing or decreasing
order Correct Choice : 1 From Lectuer # 11
42 - For the heap sort we store the tree nodes in
1. level-order traversal
2. in-order traversal
3. pre-order traversal
4. post-order traversal
Correct Choice : 1 From Lectuer # 11
7
44 - In the analysis of Selection algorithm, we make a number of passes, in fact it could be as
many as,
1. T(n)
2. T(n / 2)
3. log n
4. n / 2 + n / 4
Correct Choice : 3 From Lectuer # 11
45 - In the analysis of Selection algorithm, we make a number of passes, in fact it could be as
many as,
1. T(n)
2. T(n / 2)
3. log n
4. n / 2 + n / 4
Correct Choice : 3 From Lectuer # 11
46 - In which order we can sort?
1. increasing order only
2. decreasing order only
3. increasing order or decreasing order

4. both at the same time
Correct Choice : 3 From Lectuer # 11

47 - One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.

1. pointers
2. constants
3. variables
4. functions
Correct Choice : 1 From Lectuer # 11

49 - Slow sorting algorithms run in,

1. O(n^2)
2. O(n)
3. O(log n)
4. O(n log n)
Correct Choice : 1 From Lectuer # 11

50 - What is the total time to heapify?

1. ?(log n)
2. ?(n log n)
3. ?(n^2 log n)
4. ?(log^2n)
Correct Choice : 1 From Lectuer # 12

-When we call heapify then at each level the comparison performed takes time It will take O (1)

1. Time will vary according to the nature of input data
2. It can not be predicted
3. It will take O (log n)
4. None of the Given
Correct Choice : 3 From Lectuer # 12

53 - After partitioning array in Quick sort, pivot is placed in a position such that

1. Values smaller than pivot are on left and larger than pivot are on right
2. Values larger than pivot are on left and smaller than pivot are on right
3. Pivot is the first element of array
4. Pivot is the last element of array
Correct Choice : 2 From Lectuer # 13

54 - The running time of quick sort depends heavily on the selection of

1. No of inputs
2. Arrangement of elements in array
3. Size o elements
4. Pivot element
Correct Choice : 4 From Lectuer # 13

55 - In Quick Sort Constants hidden in T(n log n) are

1. Large
2. Medium
3. Small
4. Not Known
Correct Choice : 3 From Lectuer # 14
9

56 - In Quick Sort Constants hidden in T(n log n) are 1. Large

2. Medium

3. Small

4. Not Known

Correct Choice : 3 From Lectuer # 14

57 - Is it possible to sort without making comparisons?

1. Yes

2. No

3.

4.

Correct Choice : 1 From Lectuer # 15

58 - Merge sort is stable sort, but not an in-place algorithm

1. TRUE

2. FALSE

3.

4.

Correct Choice : 1 From Lectuer # 15

59 - In counting sort, once we know the ranks, we simply _________ numbers to their final positions in an output array.

1. Delete

2. Copy

3. Mark

4. arrange

Correct Choice : 2 From Lectuer # 15

60 - An in place sorting algorithm is one that uses ___ arrays for storage

1. Two dimensional arrays

2. More than one array

3. No Additional Array

4. None of the above

Correct Choice : 3 From Lectuer # 15

61 - Continuation/counting sort is suitable to sort the elements in range 1 to k

1. K is Large

2. K is not known

3. K may be small or large

4. K is small

10

Correct Choice : 4 From Lectuer # 15

62 - In stable sorting algorithm.

1. If duplicate elements remain in the same relative position after sorting

2. One array is used

3. More than one arrays are required

4. Duplicating elements not handled

Correct Choice : 1 From Lectuer # 15

63 - One example of in place but not stable algorithm is

1. Merger Sort

2. Quick Sort

3. Continuation Sort

4. Bubble Sort

Correct Choice : 2 From Lectuer # 15

64 - One example of in place but not stable algorithm is

1. Merger Sort
2. Quick Sort
3. Continuation Sort
4. Bubble Sort
Correct Choice : 2 From Lectuer # 15

65 - One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
1. pointers
2. constants
3. variables
4. functions
Correct Choice : 1

66 - Quick sort is
1. Stable & in place
2. Not stable but in place
3. Stable but not in place
4. Some time stable & some times in place
Correct Choice : 3 From Lectuer # 15

67 - Quick sort is
1. Stable & in place
2. Not stable but in place
3. Stable but not in place
4. Some time stable & some times in place
Correct Choice : 2 From Lectuer # 15

68 - Which may be a stable sort?
1. Merger
2. Insertion
3. Both above
4. None of the above
Correct Choice : 3 From Lectuer # 15

69 - Which of the following sorting algorithms is stable?
(i) Merge sort,
(ii) Quick sort,
(iii) Heap sort,
(iv) Counting Sort.
1. Only i
2. Only ii
3. Both i and ii
4. Both iii and iv
Correct Choice : 1 From Lectuer # 15

70 - Which of the following sorting algorithms is stable?
(i) Merge sort,
(ii) Quick sort,
(iii) Heap sort,
(iv) Counting Sort.
1. Only i
2. Only ii
3. Both i and ii
4. Both iii and iv

Correct Choice : 1 From Lectuer # 15
71 - Mergesort is a stable algorithm but not an in-place algorithm.
1. TRUE
2. FALSE
3.
4.
Correct Choice : 1 From Lectuer # 16
72 - Memorization is?
1. To store previous results for future use
2. To avoid this unnecessary repetitions by writing down the results of recursive
12
calls and looking them up again if we need them later
3. To make the process accurate
4. None of the above
Correct Choice : 2 From Lectuer # 16
73 - Dynamic programming algorithms need to store the results of intermediate sub-problems.
1. TRUE
2. FALSE
3.
4.
Correct Choice : 1 From Lectuer # 17
74 - Dynamic programming uses a top-down approach.
1. TRUE
2. FALSE
3.
4.
Correct Choice : 2 From Lectuer # 17
75 - The edit distance between FOOD and MONEY is
1. At most four
2. At least four
3. Exact four
4. Wrong
Correct Choice : 1 From Lectuer # 17
76 - The edit distance between FOOD and MONEY is
1. At most four
2. At least four
3. Exact four
4. Wrong
Correct Choice : 1 From Lectuer # 17
77 - If there are O (n^2) entries in edit distance matrix then the total running time is
O (1)
O (n^2)
O (n)
O (n log n)
Correct Choice : 2 From Lectuer # 18
13
79 - A p x q matrix A can be multiplied with a q x r matrix B. The result will be a p x r matrix

C. There are (p . r) total entries in C and each takes _________ to compute.

1. O (q)

2. O (1)
3. O (n^2)
4. O (n^3)
Correct Choice : 1 From Lectuer # 19

80 - For Chain Matrix Multiplication we can not use divide and conquer approach because,

1. We do not know the optimum k

2. We use divide and conquer for sorting only
3. We can easily perform it in linear time
4. Size of data is not given
Correct Choice : 1 From Lectuer # 19

82 - A p x q matrix A can be multiplied with a q x r matrix B. The result will be a p x r matrix
C. There are (p . r) total entries in C and each takes _________ to compute.

1. O (q)

2. O (1)
3. O (n^2)
4. O (n^3)
Correct Choice : 1 From Lectuer # 19

83 - The Knapsack problem belongs to the domain of _______________ problems.

1. Optimization

2. NP Complete
3. Linear Solution
4. Sorting
Correct Choice : 1 From Lectuer # 21

84 - Suppose we have three items as shown in the following table, and suppose the capacity of the knapsack is 50 i.e. W = 50. Item Value Weight 1 60 10 2 100 20 3 120 30 The optimal solution is to pick
1. Items 1 and 2
2. Items 1 and 3
3. Items 2 and 3

4. None of these

14
Correct Choice : 4 From Lectuer # 22
Correct Choice : 3 From Lectuer # 21

85 - Huffman algorithm uses a greedy approach to generate a postfix code T that minimizes the expected length B (T) of the encoded string.

1. TRUE

2. FALSE

3.
4.

Correct Choice : 1 From Lectuer # 22

86 - The codeword assigned to characters by the Huffman algorithm have the property that no codeword is the postfix of any other.
1. TRUE

2. FALSE

3.

4.
Correct Choice : 2 From Lectuer # 22

87 - The greedy part of the Huffman encoding algorithm is to first find two nodes with larger frequency.
1. TRUE
2. FALSE
3.
4.
Correct Choice : 2 From Lectuer # 22
88 - An optimization problem is one in which you want to find,
1. Not a solution
2. An algorithm
3. Good solution
4. The best solution
Correct Choice : 4 From Lectuer # 22

==>

MCQz (Set-3)

Q What type of instructions Random access machine can execute?
Choose best answer.
Geometric and arithmetic
Algebraic and logic
Arithmetic and logic
Parallel and recursive

Q Due to left complete nature of binary tree, the heap can be stored in
- **Arrays**
- Structures
- Link Lis
- Stack

Q What type of instructions Random Access Machine (RAM) can execute? Choose best answer
Algebraic and logic
Geometric and arithmetic
Arithmetic and logic
Parallel and recursive

Q For Chain Matrix Multiplication we can not use divide and conquer approach because,
We do not know the optimum k
We use divide and conquer for sorting only
We can easily perform it in linear time
Size of data is not given

Q knapsack problem is called a “0-1” problem, because

????????????????????

Each item must be entirely accepted or rejected
????????????????????
??????????????????????
Q word Algorithm comes from the name of the muslim author **Abu Ja'far Mohammad ibn Musa al-Khowarizmi**.
Q al-Khwarizmi's work was written in a book titled **al Kitab al-mukhatasar fi hisab al-jabr wa'l-muqabalah**

Q What is the total time to heapify?
• **O(log n)**
• O(n log n)
• O(n2 logn)
• O(log2n)
==>

MCQz (Set-4)

1. For the Sieve Technique we take time
> **T(nk)** .
>T(n /
3) >n^2
>n/3
2. Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct option:
>n items
>phases
>pointers
>constant
3. ______________ graphical representation of algorithm.
> asymptotic
>. flowchart
4. who invented the quick sort
5. function is given like 4n^4+ 5n^3+n what is the run time of this
>theata(n^4)
>theata(n^3)
>theata(4n^4+ 5n^3)
> theata(4n^4+ 5n^3)
6. main elements to a divide-and-conquer
Divide---->conquer---------->combine
7. T(n)={4 if n=1, otherwise
T(n/5)+3n^2 what is the answer if n=5
answer is 79
8. Mergesort is a stable algorithm but not an in-place algorithm.
>True
>false
9. Counting sort the numbers to be sorted are in the range 1 to k where k is small.

==>

MCQz (Set-5)

Question # 1 of 10 (Start time: 06:18:58 PM) Total Marks:
1 We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers;
this is due to the ____________ nature of the binary tree,

Select correct option:
left-complete right-
complete
tree nodes
tree leaves

Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1
Sieve Technique can be applied to selection problem?
Select correct option:
True
False

Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks:
1 A heap is a left-complete binary tree that conforms to the
____

Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms
to the heap order
Select correct
option: **heap**
binary tree binary
search tree array

Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1
Divide-and-conquer as breaking the problem into a small number
of Select correct option:
pivot
Sieve
smaller sub problems

Selection

Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:

True

False

Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?

Select correct
option: 16
10

32

31

Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1 In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis, Select correct option:

linear
arithmetic

geometric

exponent

Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1

For the heap sort, access to nodes involves simple _______________ operations. Select correct option:

arithmetic

binary
algebraic
logarithmic

==>

MCQz (Set-6)

1. For the sieve technique we solve the problem,

recursively

[redacted]athematically
[redacted]recisely
[redacted]ccurately

2. We do sorting to,

[redacted]eep elements in random positions
[redacted]eep the algorithm run in linear order
[redacted]eep the algorithm run in (log n) order

keep elements in increasing or decreasing order

3. The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,

divide-and-conquer

[redacted]ecrease and conquer

[redacted]reedy nature

[redacted]-dimension Maxima

4. In Sieve Technique we do not know which item is of interest

True

[redacted]alse

5. In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

[redacted](n)

[redacted](n / 2)

log n

[redacted] / 2 + n / 4

6. Divide-and-conquer as breaking the problem into a small number

[redacted]f pivot

[redacted]ieve

smaller sub problems

[redacted]election

7. A heap is a left-complete binary tree that conforms to the ___________

[redacted]ncreasing order only

[redacted]ecreasing order only

heap order

[redacted]og n) order

8. Slow sorting algorithms run in,

T(n^2)

[redacted](n)

[redacted](log n)

[redacted]

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

pointers

[redacted]onstants

[redacted]ariables

[redacted]unctions

10. Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,

[redacted]pper

lower

[redacted]verage

[redacted]og n

[redacted]nd

===>

MCQz (Set-7)

11. For the sieve technique we solve the

[redacted]roblem, mathematically

[redacted]recisely

[redacted]ccurately

recursively

12. Sieve Technique can be applied to selection problem?

true

[redacted]alse

13. How much time merge sort takes for an array of numbers?

[redacted]n^2)

[redacted](n)

[redacted](log n)

T(n log n)

14. For the Sieve Technique we take time

T(nk)

[redacted](n /

[redacted]) n^2

[redacted]/3

15. Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary

tree, **left-complete**

[redacted]ight-complete

[redacted]ree nodes

[redacted]ree leaves

16. How many elements do we eliminate in each time for the Analysis of Selection algorithm?

[redacted] / 2 elements

(n / 2) + n elements

[redacted] / 4 elements

[redacted] n elements

17. We do sorting to,

[redacted]eep elements in random positions

[redacted]eep the algorithm run in linear order

[redacted]eep the algorithm run in (log n) order

keep elements in increasing or decreasing order

18. In which order we can

[redacted]ort? increasing order only

[redacted]ecreasing order only

increasing order or decreasing

[redacted]**rder** both at the same time

19. A heap is a left-complete binary tree that conforms to the ___________

[redacted]ncreasing order only

[redacted]ecreasing order only

heap order

[redacted]og n) order

20. In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

[redacted](n)

[redacted](n / 2)

log n

[redacted] / 2 + n / 4

===>

MCQz (Set-8)

21. A heap is a left-complete binary tree that conforms to the ___________

[redacted]ncreasing order only
[redacted]ecreasing order only
heap order
[redacted]og n) order

22. How much time merge sort takes for an array of numbers?

[redacted](n^2)
[redacted](n)
T(log n)
[redacted](n log n)

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

pointers
[redacted]onstants
[redacted]ariables
[redacted]unctions

24. n the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the

[redacted]nalysis, linear
[redacted]rithmetic
geometric
[redacted]xponent

25. Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________

n items
[redacted]hases
[redacted]ointers
[redacted]onstant

26. A (an) _________ is a left-complete binary tree that conforms to the heap order

heap
[redacted]inary tree
[redacted]inary search
[redacted]ree array

27. The sieve technique works in ___________ as

follows **phases**
[redacted]umbers
[redacted]ntegers
[redacted]outines

28. For the sieve technique we solve the

problem, **recursively**
[redacted]athematically
[redacted]recisely
[redacted]ccurately

29. For the heap sort, access to nodes involves simple _______________ operations.

arithmetic

[redacted]inary
[redacted]lgebraic
[redacted]ogarithmic

30. The analysis of Selection algorithm shows the total running time is indeed ________in n,\

[redacted]rithmetic
[redacted]eometric

linear

[redacted]rthogonal

===>

MCQz (Set-9)

Question # 1 of 10 (Start time: 07:39:23 AM) Total Marks: 1
For the sieve technique we solve the problem,

Select correct option:

recursively

[redacted]athematically
[redacted]recisely
[redacted]ccurately

Question # 2 of 10 (Start time: 07:40:32 AM) Total Marks: 1
For the heap sort, access to nodes involves simple _______________ operations.

Select correct option:

arithmetic

[redacted]inary
[redacted]lgebraic
[redacted]ogarithmic

Question # 3 of 10 (Start time: 07:41:58 AM) Total Marks: 1
We do sorting to,
Select correct option:

[redacted]eep elements in random positions
[redacted]eep the algorithm run in linear order
[redacted]eep the algorithm run in (log n) order

keep elements in increasing or decreasing order

Question # 4 of 10 (Start time: 07:42:18 AM) Total Marks: 1
One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.

Select correct
option: **pointers**

[redacted]onstants
[redacted]ariables
[redacted]unctions

Question # 5 of 10 (Start time: 07:42:55 AM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct
option: **heap**
[redacted]inary tree binary
[redacted]earch tree array
[redacted]

Question # 6 of 10 (Start time: 07:43:24 AM) Total Marks: 1
The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct
[redacted]ption: arithmetic
[redacted]eometric
linear
[redacted]rthogonal

Question # 7 of 10 (Start time: 07:44:11 AM) Total Marks: 1
Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct
option: **n items**
[redacted]hases
[redacted]ointers
[redacted]onstant

Question # 8 of 10 (Start time: 07:45:06 AM) Total Marks: 1 Divide-and-conquer as breaking the problem into a small number of
Select correct
[redacted]ption: pivot
[redacted]ieve
smaller sub problems
[redacted]election

Question # 9 of 10 (Start time: 07:45:36 AM) Total Marks: 1

In Sieve Technique we do not know which item is of interest
Select correct option:
True
[redacted]alse

Question # 10 of 10 (Start time: 07:46:17 AM) Total Marks: 1
How much time merge sort takes for an array of numbers?
Select correct option:
[redacted](n^2)
[redacted](n)
[redacted](log n)

T(n log n)

===>

MCQz (Set-10)

Question # 1 of 10 (Start time: 07:48:31 AM) Total Marks:
1 For the heap sort we store the tree nodes in
Select correct option:

level-order traversal

[redacted]n-order traversal
[redacted]re-order traversal
[redacted]ost-order traversal

Question # 2 of 10 (Start time: 07:48:53 AM) Total Marks: 1
One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Select correct
option: **pointers**

[redacted]onstants
[redacted]ariables
[redacted]unctions

Question # 3 of 10 (Start time: 07:49:03 AM) Total Marks: 1

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct
[redacted]ption: upper

lower

[redacted]verage
[redacted]g n

Question # 4 of 10 (Start time: 07:49:59 AM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct
option: **heap**

[redacted]inary tree binary
[redacted]earch tree array
[redacted]

Question # 5 of 10 (Start time: 07:50:09 AM) Total Marks: 1

Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct
option: **n items**

[redacted]hases
[redacted]ointers

[redacted]onstant

Question # 6 of 10 (Start time: 07:50:20 AM) Total Marks: 1
How much time merge sort takes for an array of numbers?
Select correct option:
[redacted](n^2)
[redacted](n)
[redacted](log n)
T(n log n)

Question # 7 of 10 (Start time: 07:50:36 AM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ___________

Select correct option:
[redacted]ncreasing order only
[redacted]ecreasing order only
heap order
[redacted]og n) order

Question # 8 of 10 (Start time: 07:51:04 AM) Total Marks: 1
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
[redacted](n)
[redacted](n / 2)
log n
[redacted] / 2 + n / 4

Question # 9 of 10 (Start time: 07:51:41 AM) Total Marks: 1
The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:

divide-and-conquer
[redacted]ecrease and conquer
[redacted]reedy nature
[redacted]-dimension Maxima

Question # 10 of 10 (Start time: 07:52:17 AM) Total Marks: 1
The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct
[redacted]ption: arithmetic
[redacted]eometric
linear
[redacted]rthogonal
===>

MCQz (Set-11)

Question # 1 of 10 (Start time: 07:53:11 AM) Total Marks:
1 The sieve technique works in ___________ as follows
Select correct
option: **phases**
[redacted]umbers
[redacted]ntegers
[redacted]outines

Question # 2 of 10 (Start time: 07:53:53 AM) Total Marks: 1
Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct
[redacted]ption: upper
lower
[redacted]verage
[redacted]g n

Question # 3 of 10 (Start time: 07:54:01 AM) Total Marks: 1
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
[redacted](n)
[redacted](n / 2)

log n
[redacted] / 2 + n / 4

Question # 4 of 10 (Start time: 07:54:16 AM) Total Marks: 1
For the Sieve Technique we take time
Select correct option:
T(nk)
[redacted](n /
[redacted]) n^2
[redacted]/3

Question # 5 of 10 (Start time: 07:55:31 AM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct
option: **heap**
[redacted]inary tree binary
[redacted]earch tree

[redacted]rray

Question # 6 of 10 (Start time: 07:55:40 AM) Total Marks: 1

For the heap sort we store the tree nodes
in Select correct option:

level-order traversal
[redacted]n-order traversal pre-
[redacted]rder traversal post-
[redacted]rder traversal

Question # 7 of 10 (Start time: 07:55:51 AM) Total Marks: 1

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

Select correct
[redacted]ption: linear
[redacted]rithmetic
geometric
[redacted]xponent

Question # 8 of 10 (Start time: 07:56:30 AM) Total Marks: 1

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

Select correct
option: **pointers**
[redacted]onstants
[redacted]ariables
[redacted]unctions

Question # 9 of 10 (Start time: 07:56:41 AM) Total Marks: 1
Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
[redacted](1 / 1 + n)
[redacted](n / 2)
[redacted]((n / 2) + n)

Question # 10 of 10 (Start time: 07:58:12 AM) Total Marks: 1
The analysis of Selection algorithm shows the total running time is indeed ________in n,

Select correct
[redacted]ption: arithmetic
[redacted]eometric
linear
[redacted]rthogonal
===>

MCQz (Set-12)

Question No: 1 (Marks: 1) - Please choose one
An optimization problem is one in which you want to find,
► Not a solution

► An algorithm
► Good solution
► **The best solution**

Below Highlighted is Not For Midterm

Question No: 2 (Marks: 1) - Please choose one
Although it requires more complicated data structures, Prim's algorithm for a minimum spanning tree is better than Kruskal's when the graph has a large number of vertices.
► True
► False

Question No: 3 (Marks: 1) - Please choose one
If a problem is in NP, it must also be in P.
► True
► False
► unknown

Question No: 4 (Marks: 1) - Please choose one
What is generally true of Adjacency List and Adjacency Matrix representations of graphs?
► *Lists* require less space than *matrices* but take longer to find the weight of an edge (v1,v2)
► *Lists* require less space than *matrices* and they are faster to find the weight of an edge (v1,v2)
► *Lists* require more space than *matrices* and they take longer to find the weight of an edge (v1,v2)
► *Lists* require more space than *matrices* but are faster to find the weight of an edge (v1,v2)

Question No: 5 (Marks: 1) - Please choose one
If a graph has v vertices and e edges then to obtain a spanning tree we have to delete
► v edges.
► v – e + 5 edges
► v + e edges.
► None of these

Question No: 6 (Marks: 1) - Please choose one
Maximum number of vertices in a Directed Graph may be |V2|
► True
► False

Question No: 7 (Marks: 1) - Please choose one
The Huffman algorithm finds a (n) _____________ solution.
► Optimal
► Non-optimal
► Exponential
► Polynomial

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

The Huffman algorithm finds an exponential solution
► True
► False
Question No: 9 (Marks: 1) - Please choose one
The Huffman algorithm finds a polynomial solution
► True
► False
Question No: 10 (Marks: 1) - Please choose one
The greedy part of the Huffman encoding algorithm is to first find two nodes with **larger** frequency.
► True
► False
Question No: 11 (Marks: 1) - Please choose one
The codeword assigned to characters by the Huffman algorithm have the property that no codeword is the postfix of any other.
► True
► False
Question No: 12 (Marks: 1) - Please choose one
Huffman algorithm uses a greedy approach to generate a postfix code T that minimizes the expected length B (T) of the encoded string.
► True
► False
Question No: 13 (Marks: 1) - Please choose one
Shortest path problems can be solved efficiently by modeling the road map as a graph.
► True
► False
Question No: 14 (Marks: 1) - Please choose one
Dijkestra's single source shortest path algorithm works if all edges weights are non-negative and there are negative cost cycles.
► True
► False

Question No: 15 (Marks: 1) - Please choose one
Bellman-Ford allows negative weights edges and negative cost cycles.
► True
► False
Question No: 16 (Marks: 1) - Please choose one
The term "coloring" came form the original application which was in architectural design.
► True
► False
Question No: 17 (Marks: 1) - Please choose one
In the clique cover problem, for two vertices to be in the same group, they must be adjacent to each other.
► True
► False

Question No: 18 (Marks: 1) - Please choose one
Dijkstra's algorithm is operates by maintaining a subset of vertices
► True
► False
Question No: 19 (Marks: 1) - Please choose one
The difference between Prim's algorithm and Dijkstra's algorithm is that Dijkstra's algorithm uses a different key.
► True
► False
Question No: 20 (Marks: 1) - Please choose one
Consider the following adjacency list:

Which of the following graph(s) describe(s) the above adjacency list?
►
►
►

►
Question No: 21 (Marks: 1) - Please choose one
We do sorting to,
► keep elements in random positions
► keep the algorithm run in linear order
► keep the algorithm run in (log n) order
► keep elements in increasing or decreasing order
Question No: 22 (Marks: 1) - Please choose one
After partitioning array in Quick sort, pivot is placed in a position such that
► Values smaller than pivot are on left and larger than pivot are on right
► Values larger than pivot are on left and smaller than pivot are on right
► Pivot is the first element of array
► Pivot is the last element of array
Question No: 23 (Marks: 1) - Please choose one
Merge sort is stable sort, but not an in-place algorithm

► True
► False
Question No: 24 (Marks: 1) - Please choose one
In counting sort, once we know the ranks, we simply _________ numbers to their final positions in an output array.
► Delete
► copy
► Mark
► arrange

Question No: 25 (Marks: 1) - Please choose one
Dynamic programming algorithms need to store the results of intermediate sub-problems.

► True
► False

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

A p × q matrix A can be multiplied with a q × r matrix B. The result will be a p × r matrix C. There are (p . r) total entries in C and each takes _________ to compute.

► O (q)
► O (1)
► O (n2)
► O (n3)

==>

MCQz (Set-13)

Question # 1 of 10 (Start time: 10:02:41 PM) Total Marks:
1 For the sieve technique we solve the problem,

Select correct
option: **recursively**
mathematically
precisely
accurately

The sieve technique works in ___________ as follows

Select correct
option: **phases**

numbers
integers
routines

Slow sorting algorithms run in,
Select correct option:
T(n^2)
T(n)
T(log n)

A (an) _________ is a left-complete binary tree that conforms to the heap order

Select correct
option: **heap**

binary tree binary
search tree array

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

Select correct
option: linear
arithmetic
geometric
exponent

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

Select correct option: T(n)

T(n / 2) log n

n / 2 + n / 4

The sieve technique is a special case, where the number of sub problems is just

Select correct option: 5

many

1

few

In which order we can sort?

Select correct option:
increasing order only
decreasing order only

increasing order or decreasing order both at the same time

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?

Select correct option: 16

10

32

31

Analysis of Selection algorithm ends up with,
Select correct option:
T(n)

T(1 / 1 + n) T(n / 2)

T((n / 2) + n)

Last message received on 10/13 at 12:43 AM

Khanjee: We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order

keep elements in increasing or decreasing order

Khanjee: Divide-and-conquer as breaking the problem into a small number of

Select correct option: pivot

Sieve

smaller sub problems

Selection

The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option: arithmetic
geometric
linear
orthogonal
How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Sieve Technique can be applied to selection problem?
Select correct option:
True
For the heap sort we store the tree nodes in
Select correct option:
level-order traversal
in-order traversal pre-order traversal post-order traversal

===>

MCQz (Set-14)

Question # 1 of 10 (Start time: 10:49:41 PM) Total Marks: 1
Which is true statement in the following. Select correct option:
Kruskal algorithm is multiple source technique for finding MST.
Kruskal's algorithm is used to find minimum spanning tree of a graph, time complexity of this algorithm is O(EV)
Both of above
Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best Tree edge) when the graph has relatively few edges.

Question # 2 of 10 (Start time: 10:50:58 PM) Total Marks: 1
Which is true statement.
Select correct option:
Breadth first search is shortest path algorithm that works on un-weighted graphs
Depth first search is shortest path algorithm that works on un-weighted graphs.
Both of above are true.
None of above are true.

Question # 3 of 10 (Start time: 10:52:18 PM) Total Marks: 1

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?

Select correct option: **log (V)**

V.V

E.E

log (E)

Question # 4 of 10 (Start time: 10:53:03 PM) Total Marks: 1

The relationship between number of back edges and number of cycles in DFS is,

Select correct option:

Both are equal

Back edges are half of cycles

Back edges are one quarter of cycles

There is no relationship between no. of edges and cycles

Question # 5 of 10 (Start time: 10:54:28 PM) Total Marks: 1

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.

Select correct option: True

False

Question # 6 of 10 (Start time: 10:55:28 PM) Total Marks: 1

In digraph G=(V,E) ;G has cycle if and only if

Select correct option:

The DFS forest has forward edge.

The DFS forest has back edge

The DFS forest has both back and forward edge

BFS forest has forward edge

Question # 7 of 10 (Start time: 10:57:01 PM) Total Marks: 1

There is relationship between number of back edges and number of cycles in DFS Select correct option:

Both are equal.

Cycles are half of back edges.

Cycles are one fourth of back edges.

There is no relationship between back edges and number of cycles.

Question # 8 of 10 (Start time: 10:57:27 PM) Total Marks: 1

A digraph is strongly connected under what condition? Select correct option:

A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v . A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v and vice versa.

A digraph is strongly connected if for at least one pair of vertex u, v e V, u can reach v and vice versa.

A digraph is strongly connected if at least one third pair of vertices u, v e V, u can reach v and vice versa.

Question # 9 of 10 (Start time: 10:58:50 PM) Total Marks: 1
If you find yourself in maze the better traversel approach will be :
Select correct option:

BFS
BFS and DFS both are valid
Level order
DFS

Question # 10 of 10 (Start time: 11:00:12 PM) Total Marks: 1
You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T ?
Select correct option:

(V+E)
V.E
V
E

===>

MCQz (Set-15)

Question # 1 of 10 (Start time: 11:07:45 PM) Total Marks: 1
You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T ?
Select correct option:

(V+E)
V.E
V
E

Question # 2 of 10 (Start time: 11:08:28 PM) Total Marks: 1
Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.
Select correct option:

True
False

Question # 3 of 10 (Start time: 11:09:01 PM) Total Marks: 1
The relationship between number of back edges and number of cycles in DFS is, Select correct option:

Both are equal
Back edges are half of cycles
Back edges are one quarter of cycles
There is no relationship between no. of edges and cycles

Question # 4 of 10 (Start time: 11:09:41 PM) Total Marks: 1
What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?
Select correct option:

log (V)
V.V
E.E
log (E)

Question # 5 of 10 (Start time: 11:10:14 PM) Total Marks: 1
Which is true statement in the following.
Select correct option:

Kruskal algorithm is multiple source technique for finding MST.
Kruskal's algorithm is used to find minimum spanning tree of a graph, time complexity of this algorithm is O(EV)
Both of above
Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best Tree edge) when the graph has relatively few edges.

===>

MCQz (Set-16)

Question # 1 of 10 (Start time: 06:18:58 PM) Total Marks: 1
We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree, Select correct option:

left-complete
right-complete
tree nodes
tree leaves

Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1
Sieve Technique can be applied to selection problem?
Select correct option:

True
False

Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ___________
Select correct option:

increasing order only
decreasing order only
heap order
(log n) order

Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1

A (an) _________ is a left-complete binary tree that conforms to the heap order Select correct option:

heap

binary tree

binary search
tree array

Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1

Divide-and-conquer as breaking the problem into a small number of

Select correct
option: pivot
Sieve

smaller sub problems

Selection

Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1

In Sieve Technique we do not know which item is of interest Select correct option:

True

False

Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?

Select correct
option: 16
10

32

31

Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

Select correct
option: linear

arithmetic

geometric

exponent

Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1

For the heap sort, access to nodes involves simple _______________ operations.

Select correct
option: **arithmetic**

binary
algebraic
logarithmic

==>

MCQz (Set-17)

For the sieve technique we solve the problem,

Select correct
option: **recursively**

mathematically
precisely
accurately
The sieve technique works in ___________ as
follows Select correct option:
Phases
numbers
integers
routines
Slow sorting algorithms run
in, Select correct option:
T(n^2)
T(n)
T(log n)
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct
option: **heap**
binary tree binary
search tree array

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct
option: linear
arithmetic
geometric
exponent
In the analysis of Selection algorithm, we make a number of passes, in fact it
could be as many as,
Select correct option:
T(n)
T(n /
2) log n
n / 2 + n / 4
The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
Few
In which order we can sort?
Select correct option:
increasing order only
decreasing order only
increasing order or decreasing
order both at the same time
The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?

Select correct
option: 16 10

32
31
Analysis of Selection algorithm ends up with,
Select correct
option: T(n)
T(1 / 1 + n)
T(n / 2)
We do sorting to,
Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order
Divide-and-conquer as breaking the problem into a small number of
Select correct
option: pivot
Sieve
smaller sub problems
Selection
The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct
option: arithmetic
geometric
linear
orthogonal
How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements
Sieve Technique can be applied to selection problem?
Select correct option:
True
False
For the heap sort we store the tree nodes in
Select correct option:
level-order traversal
in-order traversal pre-
order traversal post-
order traversal

===>

MCQz (Set-18)

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

Random access machine or RAM is a/an

► Machine build by Al-Khwarizmi

► Mechanical machine

► Electronics machine

► Mathematical model

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

________________ is a graphical representation of an algorithm

► [redacted]otation

► [redacted]otation

► Flowchart

► Asymptotic notation

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

A RAM is an idealized machine with _______________ random-access memory.

► 256MB

► 512MB

► an infinitely large

► 100GB

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

What type of instructions Random Access Machine (RAM) can execute? Choose best answer

► Algebraic and logic

► Geometric and arithmetic

► Arithmetic and logic

► Parallel and recursive

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

What will be the total number of max comparisons if we run brute-force maxima algorithm with n elements?

► n^2

► 2

n

n

► n

►

n^8

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

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

► $O(\log n)$

► $O(n)$

► $O(n\log n)$

► $O(n^2)$

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

Consider the following

code: For(j=1; j<n;j++)

For(k=1; k<15;k++)

For(l=5; l<n; l++)

{

Do_something_constant();

}
What is the order of execution for this code.

► **O(*n*)**
► O(n^3)
► O(n^2 log *n*)
► O(n^2)

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

Consider the following Algorithm:

Factorial
(n){ if (n=1)
return 1
else
return (n * Factorial(n-1))
{
Recurrence for the following algorithm is:

► T(n) = T(n-1) +1
► T(n) = nT(n-1) +1
► T(n)= T(n-1) +n
► **T(n)=T(n(n-1)) +1**

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

What is the total time to heapify?

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

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

When we call heapify then at each level the comparison performed takes time

► **It will take Θ (1)**
► Time will vary according to the nature of input data
► It can not be predicted
► It will take Θ (log n)

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

In Quick sort, we don't have the control over the sizes of recursive calls

► **True**
► False
► Less information to decide
► Either true or false

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

Is it possible to sort without making comparisons?

► **Yes**
► No

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

If there are Θ (n^2) entries in edit distance matrix then the total running time is

► Θ (1)
► **Θ (n^2)**
► Θ (n)
► Θ (n log n)

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

For Chain Matrix Multiplication we can not use divide and conquer approach because,

► We do not know the optimum k

► We use divide and conquer for sorting only

► We can easily perform it in linear time

► Size of data is not given

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

The Knapsack problem belongs to the domain of _______________ problems.

► Optimization

► NP Complete

► Linear Solution

► Sorting

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

Suppose we have three items as shown in the following table, and suppose the capacity of the knapsack is 50 i.e. W = 50.

Item	Value	Weight
1	60	10
2	100	20
3	120	30

The optimal solution is to pick

► Items 1 and 2

► Items 1 and 3

► Items 2 and 3

► None of these

===>

MCQz (Set-19)

Question # 1 of 10 Total Marks: 1

Divide-and-Conquer is as breaking the problem into a small number of

· Smaller Sub Problems

· Pivot

· Sieve

· Solutions

Question # 2 of 10 Total Marks: 1

Analysis of Selection Sort ends up with

· T(n)

· T(1/1+n)

· T(n/2)

· T((n/2) +n)

Question # 3 of 10 Total Marks: 1

How many elements do we eliminate each time for the Analysis of Selection Algorithm?

· (n / 2)+n Elements

· n / 2 Elements

· n / 4 Elements

· 2 n Elements
Question # 4 of 10 Total Marks: 1
A *heap* is a left-complete binary tree that conforms to the ?
· Increasing Order
· Decreasing order
· **Heap Order**
· (nlog n) order
Question # 5 of 10 Total Marks: 1
The Sieve Sequence is a special case where the number of smaller sub problems is just_ .
· 4
· Many
· **1**
· Few

Question # 6 of 10 Total Marks: 1
Heaps can be stored in arrays without using any pointers this is due to the of the binary tree?
· Tree Nodes
· Right-Complete Nature
· **Left-Complete Nature**
· Tree Leaves
Question # 7 of 10 Total Marks: 1
For the Heap Sort access to nodes involves simple _ operations:
· Geometric
· Linear
· **Arithmetic**
· Algebraic
Question # 8 of 10 Total Marks: 1
The Analysis of Selection Sort shows that the total running time is indeed in n?
· Geometric
· **Linear**
· Arithmetic
· Algebraic
Question # 9 of 10 Total Marks: 1
For the sieve technique we solve the problem
· **Recursively**
· Randomly
· Mathematically
· Precisely
Question # 10 of 10 Total Marks: 1
How much time merger sort takes for an array of numbers?
· T(n^2)
· T(n)
· T(log n)
· **T(n log n)**

===>

MCQz (Set-20)

Question # 1 of 10 (Start time: 06:18:58 PM) Total Marks:
1 We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,

Select correct option:
left-complete right-complete

tree nodes
tree leaves
Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1

Sieve Technique can be applied to selection problem? Select correct option:
True
False
Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the

____

Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order

Select correct
option: **heap**

binary tree binary
search tree array

Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1
Divide-and-conquer as breaking the problem into a small number of

Select correct
option: pivot
Sieve
smaller sub problems
Selection
Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:
True

False

Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1 The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:
16
10
32
31

Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

Select correct
option: linear
arithmetic
geometric
exponent

Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1 For the heap sort, access to nodes involves simple _______________ operations.

Select correct
option: **arithmetic**
binary
algebraic
logarithmic

Question # 1 of 10 (Start time: 10:02:41 PM) Total Marks: 1 For the sieve technique we solve the problem,

Select correct
option: **recursively**
mathematically
precisely
accurately

The sieve technique works in ___________ as follows

Select correct
option: **phases**
numbers
integers
routines

Slow sorting algorithms run in,
Select correct option:
T(n^2)
T(n)
T(log n)

A (an) _________ is a left-complete binary tree that conforms to the heap order Select correct option:
heap
binary tree

binary search
tree array

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

Select correct
option: linear

arithmetic
geometric
exponent

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

Select correct option:

T(n)
T(n / 2) log n
n / 2 + n / 4

The sieve technique is a special case, where the number of sub problems is just

Select correct
option: 5
many
1
few

In which order we can sort?

Select correct option:
increasing order only
decreasing order only
increasing order or decreasing order both at the same time

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In

order to move a tower of 5 rings from one peg to another, how many ring moves are required?

Select correct option:
16
10
32
31

Analysis of Selection algorithm ends up with,

Select correct
option: T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

Last message received on 10/13 at 12:43 AM
Khanjee: We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order

keep elements in increasing or decreasing order

Khanjee: Divide-and-conquer as breaking the problem into a small number of Select correct option:

pivot
Sieve

smaller sub problems

Selection

The analysis of Selection algorithm shows the total running time is indeed ________in n,

Select correct option: arithmetic

geometric

linear

orthogonal

How many elements do we eliminate in each time for the Analysis of Selection algorithm?

Select correct option:

n / 2 elements

(n / 2) + n elements
n / 4 elements
2 n elements

Sieve Technique can be applied to selection problem? Select correct option:

True

For the heap sort we store the tree nodes in

Select correct option:

level-order traversal

in-order traversal pre-order traversal post-order traversal

==>

MCQz (Set-21)

1-One of the clever aspects of heaps is that they can be stored in arrays without using any ________________.

pointers **

constants
variables
functions

2- For the heap sort we store the tree nodes in level-order traversal**

in-order traversal
pre-order traversal
post-order traversal

3- The sieve technique works in ____________ as follows phases

numbers
integers
routines

4- In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent ________________ series in the analysis,

linear
arithmetic
geometric
** exponent

5- We do sorting to,

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order ***

6- In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

T(n)
T(n / 2)***
log n
n / 2 + n / 4

7- In which order we can sort? increasing order only
decreasing order only
increasing order or decreasing order ***
both at the same time

8- In Sieve Technique we do not know which item is of interest True**
False

9- For the sieve technique we solve the problem,
recursively**
mathematically
precisely

10- Divide-and-conquer as breaking the problem into a small number of
pivot
Sieve
smaller sub problems **
Selection
==>

MCQz (Set-22)

Question # 1 of 10 Total Marks: 1
Divide-and-Conquer is as breaking the problem into a small number of
· **Smaller Sub Problems**
· Pivot
· Sieve
· Solutions

Question # 2 of 10 Total Marks: 1
Analysis of Selection Sort ends up with
· **T(n)**
· T(1/1+n)
· T(n/2)
· T((n/2) +n)

Question # 3 of 10 Total Marks: 1

How many elements do we eliminate each time for the Analysis of Selection Algorithm?
· (n / 2)+n Elements
· **n / 2 Elements**
· n / 4 Elements
· 2 n Elements
Question # 4 of 10 Total Marks: 1
A *heap* is a left-complete binary tree that conforms to the ?
· Increasing Order
· Decreasing order
· **Heap Order**
· (nlog n) order
Question # 5 of 10 Total Marks: 1
The Sieve Sequence is a special case where the number of smaller sub problems is
just_ .
· 4
· Many
· **1**
· Few

Question # 6 of 10 Total Marks: 1
Heaps can be stored in arrays without using any pointers this is due to the of the binary tree?
· Tree Nodes
· Right-Complete Nature
· **Left-Complete Nature**
· Tree Leaves
Question # 7 of 10 Total Marks: 1
For the Heap Sort access to nodes involves simple _ operations:
· Geometric
· Linear
· **Arithmetic**
· Algebraic
Question # 8 of 10 Total Marks: 1
The Analysis of Selection Sort shows that the total running time is indeed in n?
· Geometric
· **Linear**
· Arithmetic
· Algebraic
Question # 9 of 10 Total Marks: 1
For the sieve technique we solve the problem
· **Recursively**
· Randomly
· Mathematically
· Precisely
Question # 10 of 10 Total Marks: 1
How much time merger sort takes for an array of numbers? · T(n^2)

· T(n)
· T(log n)
· **T(n log n)**

==>

MCQz (Set-23)

Question # 2 of 10 (Start time: 09:23:34 PM) Total Marks: 1
The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

arithmetic
geometric
linear
orthogonal

Question # 3 of 10 (Start time: 09:24:49 PM) Total Marks: 1
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:

linear
arithmetic
geometric
exponent

Question # 4 of 10 (Start time: 09:25:08 PM) Total Marks: 1
Slow sorting algorithms run in,
Select correct option:

T(n^2) page 39
T(n)
T(log n)
T(n log n)

Question # 5 of 10 (Start time: 09:26:31 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:

left-complete
right-complete
tree nodes
tree leaves

Question # 6 of 10 (Start time: 09:27:11 PM) Total Marks: 1

A heap is a left-complete binary tree that conforms to the __________
Select correct option:

increasing order only
decreasing order only
heap order
(log n) order

Question # 7 of 10 (Start time: 09:27:25 PM) Total Marks: 1
Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

Question # 8 of 10 (Start time: 09:27:45 PM) Total Marks: 1
The number of nodes in a complete binary tree of height h is
Select correct option:

2^(h+1) – 1
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1

Question # 9 of 10 (Start time: 09:28:01 PM) Total Marks: 1
The sieve technique works in __________ as follows
Select correct option:

phases
numbers
integers
routines

Question # 10 of 10 (Start time: 09:28:24 PM) Total Marks: 1
The running time of quick sort depends heavily on the selection of
Select correct option:

No of inputs
Arrangement of elements in array
Size o elements
Pivot element

Question # 1 of 10 (Start time: 09:22:00 PM) Total Marks: 1
In Quick sort algorithm,constants hidden in T(n lg n) are
Select correct option:

Large
Medium
Not known (not confirmed) small

===>

MCQz (Set-24)

Question # 1
Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct option: upper
lower page 39
average
log n

Question # 2
For the heap sort we store the tree nodes in
Select correct option:
level-order traversal
in-order traversal pre-order traversal post-order traversal

Question # 3
Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
Select correct option:
There is explicit combine process as well to conquer the solutin.
No work is needed to combine the sub-arrays, the array is already sorted
Merging the subarrays
None of above.

Question # 4
In Sieve Technique we do not know which item is of interest
Select correct option:
True
False

Question # 5
One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Select correct option:
pointers
constants
variables

functions

Question # 6
The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few

Question # 7
The number of nodes in a complete binary tree of height h is
Select correct option:
2^(h+1) – 1
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1

Question # 8
A heap is a left-complete binary tree that conforms to the ___________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

Question # 9
In which order we can sort?
Select correct option:
increasing order only
decreasing order only
increasing order or decreasing order both at the same time

Question # 10
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines

MCQz (Set-26) From 2004 Paper

Q#1 Total time for heapify is:

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

O (log n)

Q#2

Solve the recurrence using iteration method and also find time complexity (Θ notation) T (n) = C + O (1) + T (n-1) T (1) =1 and C is a constant.

Q#3

Suggest the criteria for measuring algorithms. Also discuss the issues need to be discussed in the algorithm design.

Q#4

If an algorithm has a complexity of $\log_2 n + n\log_2 n + n$. we could say that it has complexity

O(n)

O(n $\log_2$ n)

O(3)

O($\log_2$ ($\log_2$ n))

O ($\log_2$ n)

Q#5

Let the set P = {(1, 13), (2, 9), (3, 15), (4, 12), (5, 14), (6, 6), (7, 3), (8, 10), (9, 2), (10, 8), (11, 9), (13, 6), (15, 3), (18, 5)}. You are required to give the final state of stack after the execution of sweep line algorithm for 2d-maxima. No intermediate steps or graphics to be shown.

Q#6

Suppose we have hardware capable of executing 10^6 instructions per second. How long would it take to execute an algorithm whose complexity function is T (n) = $2n^2$ on an input of size n = 10^8?

Q#7

In RAM model instructions are executed One after another

Parallel

Concurrent

Random

Q#8

In selection algorithm, because we eliminate a constant fraction of the array with each phase, we get the

Convergent geometric series

Divergent geometric series None of these

Q#9

Due to left-complete nature of binary tree, heaps can be stored in

Link list

Structure

Array

None of above

===>

MCQz (Set-27) From 2004 Paper

Consider the following pairs of functions
I . $f(x) = x^2 + 3x+7$ $g(x) = x^2 + 10$
II $f(x) = x^2\log(x)$ $g(x) = x^3$
III $f(x) = x^4 + \log(3x^8 +7)$ $g(x) = (x^2 +17x +3)^2$
Which of the pairs of functions f and g are asymptotic?
Only I
Only II
Both I and III
None of the above

Question No. 3 Marks : 1

Execution of the following code
fragment int Idx;
for (Idx = 0; Idx < N; Idx++)
{
cout << A[Idx] << endl;
}
is best described as being
O(N)
$O(N^2)$
O(log N)
O(N log N)

Question No. 4 Marks : 1

If algorithm *A* has running time $7n^2 + 2n + 3$ and algorithm *B* has running time $2n^2$, then
Both have same asymptotic time complexity
A is asymptotically greater
B is asymptotically greater
None of others

Question No. 5 Marks : 1

Which of the following sorting algorithms is stable?
(i) Merge sort,
(ii) Quick sort,
(iii) Heap sort,
(iv) Counting
Sort. Only i
Only ii
Both i and ii
Both iii and iv

Question No. 6 Marks : 5

Determine the complexity of an algorithm that measures the number of print statements in an
algorithm that takes a positive integer *n* and prints 1 one time, 2 two times, 3 three times , ... ,
n n times.
That is
1
2 2
3 3 3

……………
……………
n n n n ……..n (n times)

==>

MCQz (Set-28) From 2007 Paper

Q#1 Total time for heapify is:
O (log2 n)
O (n log n)
O (n2 log n)
O (log n)

Q#2
Solve the recurrence using iteration method and also find time complexity (Θ notation)
T (n) = C + O (1) + T (n-1)
T (1) =1 and C is a constant.

Q#3
Suggest the criteria for measuring algorithms. Also discuss the issues need to be discussed in the algorithm design.

Q#4
If an algorithm has a complexity of **log 2 *n* + nlog 2 *n* + n**. we could say that it has complexity
O(n)
O(n log2 n)
O(3)
O(log2 (log2 n
)) O (log2 n)

Q#5
Let the set P = {(1, 13), (2, 9), (3, 15), (4, 12), (5, 14), (6, 6), (7, 3), (8, 10), (9, 2), (10, 8), (11, 9), (13, 6), (15, 3), (18, 5)}. You are required to give the final state of stack after the execution of sweep line algorithm for 2d-maxima. No intermediate steps or graphics to be shown.

Q#6
Suppose we have hardware capable of executing 106 instructions per second. How long would it take to execute an algorithm whose complexity function is T (n) = 2n2 on an input of size n = 108?

Q#7
In RAM model instructions are executed
One after another
Parallel
Concurrent
Random

Q#8
In selection algorithm, because we eliminate a constant fraction of the array with each phase, we get the
Convergent geometric series
Divergent geometric series
None of these

Q#9

Due to left-complete nature of binary tree, heaps can be stored in
Link list
Structure
Array
None of above

==