Virtual University	**CS502- Fundamentals of Algorithms** **Solved MCQS** **From Midterm Papers**	**Dec 09,2012**
	Solved By Rabia Rauf	

(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 θ 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
1. Algebraic and logic
2. 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
1. Machine build by Al-Khwarizmi
2. Mechanical machine
3. Electronics machine

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

19- **_______________** is a graphical representation of an algorithm
1. Segma Notation
2. 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?
1. n^2
2. n^n/2
3. n
4. 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
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

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?
1. 90 seconds
2. 9 seconds
3. 0.9 seconds
4. 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
1. ?(n)
2. O(2^n)
3**. O(n^2)**
4. O(n^2logn)
Correct Choice : 3 From Lectuer # 4

24 - Which sorting algorithm is faster
1. O (n log n)
2. O n^2
3. O (n) (pg#26)
4. 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**
2. A is asymptotically greater
3. B is asymptotically greater
4. 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)**
2. O(n)
3. O(nlogn)
4. 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)**
3. T(log n)
4. 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:
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

29 - For the Sieve Technique we take time
1. **T(nk) .** **(pg#34)**
2. T(n / 3)
3. n^2
4. 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

3. pointers
4. constant
Correct Choice : 1 From Lectuer # 10

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

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

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

34 - 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

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 Lecture # 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
□4 if ṇ□ 1
T (ṇ)□̣□ 2
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)
Tθ (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,
$\Theta(n^2)$ **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

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

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

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

196-For the Heap Sort access to nodes involves simple _ operations:
· 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)

Go0d Luck☺

Solved By Rabia Rauf