Important Questions in DAA (TCS-503)

1. What do you mean by algorithm? Write its characteristics.
2. Describe Big-O Notation.
3. Describe Theta- Notation.
4. What do you mean by recursion? Explain with an example.
5. Explain Median and Order Statistics.
6. Explain simultaneous Min and Max Algorithm with example.
7. Differentiate complexities of Merge sort and Quick Sort.
8. Explain Analysis of Algorithm.
9. Describe Master’s Theorem with an example.
10. Explain Heap Sort Algorithm.
11. Explain the complexity of Heap Sort.
12. Explain Radix sort for the following list of numbers: 321, 201, 042, 099, 081, 064, 101, 056, 089, 134, 256
13. Show the steps of inserting key 41,38,31,12,9,8 into initially empty Red Black Tree.
14. Explain Merge Sort insertion operation for the following data items: 90,60,30,50,40,20,10
15. Explain Heap Sort with an example.
16. Define Algorithm, Analysis of Algorithm, and Design of Algorithm. Write the Full

Form of DAA and ADA.

1. What are the features of Algorithm? Explain briefly.
2. What are different types of Complexity of Algorithm? Briefly explain with examples. Which one of them is most important and why?
3. What do you mean by asymptotic notations? Why are they used?
4. Define O, Ω andΘ. Also draw the diagram for them.
5. Show that merge sort algorithm follows the divide and conquer paradigm.
6. Find out big oh, big omega & big theta for following Functions:-
7. f(n) = 7n+4
8. f(n)= 7n2+8n+2
9. Use the Master Method to solve the following:
10. *T*(*n*) *=* 4*T*(*n*/2) *+ n*
11. *T(n) = 4T(n/2) + n2*
12. Using Figure as Model, Illustrate the operation of MergeSort on the following data: 6, 14, 3, 25, 2, 10, 2, 22.
13. Illustrate the operation of QuickSort on the following data: 10,2,12, 7.
14. Using Figure as a model, illustrate the operation of Heapsort on the array of elements 6,14,3,25,2,10,20,7,6
15. Illustrate the operation of counting sort on the following data: 2, 3, 0,3,4,0
16. What do you mean by median and order statistis? How both the minimum and the maximum of a sort of n elements can be computed in almost 3 ⎣n/2 ⎦ comparisons?
17. What is red-black tree? What are the properties of Red-Black Tree? Explain with example
18. Insert the following nodes in sequence in an empty Red-Black Tree

15, 12, 35, 3, 21, 14, 1,16, 30

1. What do you mean by Algorithm? What are different algorithm design techniques? Explain briefly.
2. What are the features of Algorithm? Explain briefly.
3. Find the complexity of Linear Search Technique in Best, Worst and Average Case.
4. What do you mean by growth of functions? Why are they used?
5. Define O, Ω andΘ. Briefly explain. Also draw the diagram for them.
6. Show that Quick Sort algorithm follows the divide and conquer paradigm.
7. Find out big oh, big omega & big theta for following Functions:-
8. f(n) = 3n+3
9. f(n)= 10n2+4n+5
10. Use the Master Method to solve the following:
11. *T*(*n*) *= 9T*(*n*/3) *+ n*
12. *T(n) = 4T(n/2) +n*
13. Using Figure as Model, Illustrate the operation of MergeSort on the following data: 1, 10, 4, 24, 3, 11, 7, 25.
14. Illustrate the operation of QuickSort on the following data: 11,3, 113, 8.
15. Using Figure as a model, illustrate the operation of Heapsort on the array of elements: 1, 10, 4, 24, 3, 11, 7, 25.
16. Illustrate the operation of counting sort on the following data:

4,2,0,2,5,0,5

1. Prove that in a  *red-black tree with n internal nodes has height at most 2lg(n + 1)*.
2. Explain all cases of Insertion in Red- Black Tree with examples.
3. Insert the following nodes in sequence in an empty Red-Black Tree: S, U, N, D, A, Y.