QUESTION BANK ON ANALYSIS OF ALGORITHMS

MODULE – 3

DIVIDE AND CONQUER

1. What is stable algorithm? Is Quicksort stable? Explain with example.

Solu: The algorithm maintains records, even for the equality keys. NO

1. Describe Recursive version of Binary Search algorithms. Show that the worst case efficiency is in O(logn).
2. Explain with example a sorting algorithm that uses divide and conquer technique which divides the problem size by considering position. Give the corresponding algorithms and analyze the time complexity.
3. Give general divide and conquer recurrence with necessary explanation. Solve the recurrence T(n) = 2T(n/2) + 1, T(n)=2T(n/2)+n.
4. Apply Merge Sort to sort the list S, O, R, T, I, N, G in alphabetical order.
5. Apply Quick Sort to sort the list 50, 30, 10, 90, 80, 20, 40, 70.
6. Apply Quick Sort to sort the list QUESTION in alphabetic order.
7. Show that the worst case efficiency of Quick sort is Ѳ(n^2).
8. Define Master theorem and find the complexity for the given recurrence relation.

T(n)= 4T(n/2)+n2

T(n)= 2T(n/2)+n/logn

T(n)= T(n/2)+n2

1. Consider a set of 13 elements in an array list. The elements of array that require largest number of key comparison when searched for by binary search. Find the average number of key comparisons made by binary search in successful search and unsuccessful search in this array.