

## Misc Question Bank DAA Unit-2

- Q.1 What are the disadvantages of using divide and conquer?
- Q.2 State the differences between MergeSort and QuickSort Algorithms. Which out of the two is an in-place algorithm and why?
- Q.3 Explain how the time complexity of Strassen's Matrix Multiplication is reduced by reducing just 1 multiplication compared to the traditional method.
- Q.4 How does Binary Search use the concept of Divide and Conquer to search for the given element in an array. Prove it's efficacy by discussing its time complexity.

### Numerical Problems:

1. Solve the following using Master Theorem:

- a.  $T(n) = 4 T_{\frac{n}{4}} + n^2$
- b.  $T(n) = 4 T_{\frac{n}{3}} + n^3$
- c.  $T(n) = 4 T_{\frac{n}{2}} + n \log n$
- d.  $T(n) = 4 T_{\frac{n}{5}} + n^{2.87}$
- e.  $T(n) = 36 T_{\frac{n}{36}} + \log n$

2. Find the Euclidean distance between the following points:

- a. {3,3} and {10,7}
- b. {4,3} and {7,8}

State an algorithm which uses divide and conquer strategy alongwith Euclidean distance to solve problem.

4. Sort the following string using MergeSort Algorithm in increasing order.

- a. 'DIVIDEANDCONQUER'
- b. 'POLYNOMIAL'

5. Given an array arr = {45,77,89,90,94,99,100} and key = 99, show how binary search algorithm will determine whether the key is present in the array or not.