Assignment – 1

Subject/ Subject code	Semester/Branch	Issue Date	Due Date
DAA/01CE0503	**5th – (TC1,TC2,TC3,TC4+TD1,TP1)**	**25/08/2022**	**05/09/2022**

1. What is an algorithm? Explain various properties of an algorithm.
2. Define: Big Oh, Big Theta and Big Omega
3. Find 1910 * 786 using Divide and Conquer algorithm and also mention the steps of algorithm.
4. What is Amortized analysis? Explain Aggregate Method with suitable example.
5. Solve the following recurrence relation using Master's theorem
   1) T(n) = 4T(n/2) + n^2
   2) T(n) = 2T(n/2) + nlogn
6. Sort data <20, 50, 30, 75, 90, 60, 80, 25, 10, 40> using Heap Sort.
7. Solve the following recurrence equation using tree method. T(n) = 2T(n/2) + n. Here T(1) = 1
8. Write an algorithm for insertion sort. Analyze insertion sort algorithm for best case and worst case.
9. Write an algorithm to solve 5^9 using Exponential Method.
10. Solve the following 0/1 Knapsack Problem using Dynamic Programming. There are five items whose
    weights and values are given in following arrays.
    Weight w[] = { 1,2,5,6,7 }
    Value v[] = { 1,6,18, 22, 28 }
11. Given the coins of denominations 2,4,5 and change to be made is 7 Find out the minimum number of coins used to provide the change using Dynamic Programming.