Course Code: MCA-201   **Course Name: Design and Analysis of Algorithms**

Assignment 1
(Based on Unit-I & II)

No.	Question	CO	BTL
Q 1.	Solve the recurrence $T(n) = 4T(n/2) + n3$	CO1	BTL 1
Q 2.	"Sorting of list" is mandatory before "merging of list" in merge sort. Justify. Can we merge unsorted lists to get sorted list?	CO3	BTL 3
Q 3.	Differentiate between big oh (O) and little oh (o) asymptotic functions..	CO2	BTL 2
Q4.	Illustrate time complexity of merge sort as O(n log n).	CO1	BTL 1
Q5.	Apply bucket sort on the input array [0.78, 0.17, 0.39, 0.26, 0.72, 0.94, 0.21, 0.12, 0.23, 0.68]	CO1	BTL 1
Q6.	Define the terms best case, worst case, and average case time complexity.	CO1	BTL 1
Q7.	Solve using Master's Theorem: 1. $T(n) = 2T(n/4)+1$ 2. $T(n) = 2T(n/4) + sqrt(n)$	CO3	BTL 3
Q8.	Show that the solution of $T(n) = T(n-1) + n$ is $O(n^3)$.	CO2	BTL 2
Q9.	Explain string matching with finite automata algorithm.	CO1	BTL 1