FACULTY OF ENGINEERING, UNIVERSITY OF LUCKNOW

Mid-Term Test - I

B.TECH. SEMESTER - VI, 2023-24

Branch: CSE/CSE-AI

Student's Roll No.....

Subject Code: CS601 Subject Title: Design and Analysis of Algorithm

Time: 1 Hrs. **Full Marks: 20**

Note: Attempt questions from each section as per instructions. The *symbols* have their usual meaning.

SECTION A

Attempt all parts of this question. Each part carries 1 mark. **(1 x5=5)**

a) What do you mean by complexity of an Algorithm?

b) Write Counting Sort algorithm and mention its Complexity.

c) Give the Statement of Greedy technique for Fractional Knapsack Problem.

d) For the function $\mathbf{f(n) = 27n^2 + 16n}$, find θ- notation.

e) Consider the following recurrence: $\mathbf{T(n)=4T(n/2)+n}$. find its asymptotic bound using Master Method.

SECTION B

Attempt any THREE questions of the following. Each question carries 5 marks. **(5 x 3=15)**

2. Discuss Asymptotic notations in detail with related Example

3. **A= (2, 3, 18, 17, 5, 1)** solve using Quick Sort.

4. Write down the **MERGE SORT** algorithm follows divide- and-conquer paradigm and write down the complexity.

5. Give a set **S= {1, 3, 4, 5} and X=8**, we have to find Subset-Sum using backtracking approach.