Course/ Batch: BTech/ SCSET
Course Code: CSET244
Semester: Even
Session: 2024-2025

Course Type: Core
Course Name: Design and Analysis of Algorithms

Tutorial Assignment: Week 3

Tutorial title: Solving Recurrence Relation

CO Mapping

Question no	CO1	CO2	CO3
Q1	✓	✓	
Q2	✓	✓	
Q3	✓	✓	
Q4	✓	✓	

Q1. Let the recurrence relation T(n) = T(n-1) + T(n-2) - T(n-3) for n>3, and for n≤3 T(n)=n. Give Θ(.) bounds for T(n).

Q2. Solve the following recurrence relation using change of variable method and give a Θ bound for it.
$T(n) = 2T(\sqrt{n}) + 1$

Q3. Give Θ(.) bounds for T(n) in each of the following recurrence relations using master theorem.
(i) $T(n) = 4T(\frac{n}{16}) + \sqrt{n}$
(ii) $T(n) = 2T(\frac{n}{2}) + n\log n$

Q4. Find the Θ(.) bounds for T(n) of the following recurrence relations using the recursion tree method.
T(n) = T(n/10) + T(9n/10) + n