**First Semester 2023-24**

**Data Structures and Algorithms Design (Merged-SEZG519/SSZG519)**

**Exercises (Analyzing Algorithms)**

1. Use Master’s theorem to solve the following division functions.
   1. T(n) = 3T(n/2) + n^2
   2. T(n) = 4T(n/2) + n^2
   3. T(n) = 16T(n/4) + n
   4. T(n) = 2T(n/2) + nlogn
   5. T(n) = 2T(n/4) + n^(0.51)
   6. T(n) = √2T(n/2) + log n
   7. T(n) = 6T(n/3) + n^2 log n
2. Use Master’s theorem to solve the following decreasing functions.
   1. T(n) = 0.5T(n-1) + n
   2. T(n) = 2/3T(n-1) + n^2
   3. T(n) = T(n-1) + n^2
   4. T(n) = 2T(n-1) + n^2
   5. T(n) = 3T(n-2) + n