July 2025 CSE 220
Online on Signals and Their Properties
Subsections: C1, C2
Total Marks: 10
Total Time: 30 Minutes

January 6, 2026

In this assignment, you need to implement time reversal of a sampled continuous-time signal in Python. Then using this function, you need to decompose a given signal $x(t)$ into even and odd components. You also need to plot the graphs of each of these signals.

Let the base signal be $x(t)$ (provided in the template file). You will compute and plot:

$$x(t), \quad x(-t), \quad x_e(t), \quad x_o(t).$$

Tasks

1. Generate the time axis t and compute $x(t)$.
2. Implement a function `time_reverse(...)` that produces $x(-t)$.
3. Using only your `time_reverse(...)` function, compute $x_e(t)$ and $x_o(t)$.
4. Plot (with proper labels and legend) on the same figure: $x(t)$, $x_e(t)$, and $x_o(t)$. Also make a separate plot of $x(t)$ and $x(-t)$.

Marks Distribution

- Plotting the graph of $x(t)$: 1 Mark
- Implementing time reversal: 2 Marks
- Implementation of Even and Odd Decomposition: 4 Marks
- Plotting the graph of $x(-t)$, $x_e(t)$ and $x_o(t)$: 3 Marks