National University
of Computer & Emerging Sciences
Islamabad

CS2008 Numerical Computing

Assignment No: 04	**CLO:**
	Semester: Fall 2024
Due date: As of GCR date	**Marks:** 10 x5 = 50

Instructions

1. **Plagiarized work will result in zero marks.**
2. **No retake or late submission will be accepted.**
3. The submission should be a SINGLE UNZIPPED NOTEBOOK submitted on google classroom.
4. This notebook should properly document what you did? How you did it? And the source-code for each part as well as the generated outputs.
5. Your submission file should be according to the following **format: id_section_A2** e.g., i22123456_A_A2. (Note: A2 in the end denotes Assignment 2).

. Consider the electric circuit depicted in Figure

(a) Analyze the particular circuit using Kirchhoff's laws, and form a linear system with 8 equations and 8 unknowns.

(b) Solve the linear system using dense matrix techniques. Verify that your solution satisfies all the equations derived from Kirchhoff's laws.

(c) Solve the linear system using sparse matrix techniques and absolute error tolerance 10^{-6}.

(d) Compare the speed of the two numerical methods and say which one is faster.

(e) Compute the difference of the two solutions and describe their accuracy.