National University

of Computer & Emerging Sciences Peshawar Campus

Program: BS (CS)
Semester: Spring-2020
Course: MT207-Numerical Methods

Examination: Assignment # 02
Total Marks: 10, Weightage: **2.5**
Date of Submission: Coming Class

Note: Attempt all questions

Problem 1

Use Gaussian elimination and three-digit chopping arithmetic to solve the following linear systems, and compare the approximations to the actual solution.

$$\begin{aligned} \pi x_1 + \sqrt{2}x_2 - \quad x_3 + \quad x_4 &= 0, \\ e x_1 - \quad x_2 + \quad x_3 + \quad 2x_4 &= 1, \\ x_1 + \quad x_2 - \sqrt{3}x_3 + \quad x_4 &= 2, \\ -x_1 - \quad x_2 + \quad x_3 - \sqrt{5}x_4 &= 3. \end{aligned}$$

Actual solution $[1.35, -4.68, -4.03, -1.66]$.

Problem 2

Solve the linear system in problem 1 using Gaussian elimination with partial pivoting and three-digit rounding arithmetic.

Problem 3

Solve the linear system in problem 1 using Gaussian elimination with scaled partial pivoting and three-digit rounding arithmetic.

The End