

Important Instructions:

1. All students are required to attempt the test independently without seeking assistance from any external sources.
2. The use of internet resources, AI tools (such as ChatGPT or similar platforms), textbooks, notes, or help from other individuals is strictly prohibited.
3. Students must ensure academic honesty and integrity throughout the test. Any form of cheating, plagiarism, or misconduct will result in disciplinary action and may lead to a zero score.
4. Keep your focus on the test at hand and avoid switching between tabs, applications, or devices for unauthorized purposes.
5. Submission of the test confirms that the work is entirely your own and completed without any unfair means.
6. The instructor reserves the right to review and verify responses for authenticity.

(CLO-2: GA-2: 2 marks)

Q1 Solve the equation $Ax = b$ using LU Factorization.

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 4 & 6 \end{bmatrix} \quad b = \begin{bmatrix} 14 \\ 20 \\ 29 \end{bmatrix}$$

(CLO-1: GA-2: 2 marks)

Q2 Use Inverse of Coefficient-matrix to solve the System.

$$x_1 - x_2 + 3x_3 = 2$$

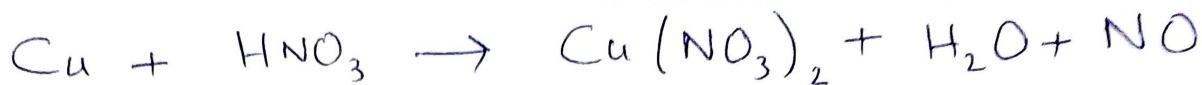
$$2x_1 + x_2 + 2x_3 = 2$$

$$-2x_1 - 2x_2 + x_3 = 3$$

Q3

(C10-1: C1A-2: 2 marks)

Balance the chemical equation



Q4

(C10-1: C1A-2: 2 marks)

Solve the linear system using Gaussian elimination & back substitution method.

$$9x_1 + 3x_2 + 4x_3 = 7$$

$$4x_1 + 3x_2 + 4x_3 = 8$$

$$x_1 + x_2 + x_3 = 3$$

Q5

(C10-2: C1A-2: 2 marks)

Consider the matrices

$$A = \begin{bmatrix} 1 & 2 & 4 \\ 2 & 6 & 0 \end{bmatrix}$$

$$B = \begin{bmatrix} 4 & 1 & 4 & 3 \\ 0 & -1 & 3 & 1 \\ 2 & 7 & 5 & 2 \end{bmatrix}$$

Find

$A \times B$ and $B \times A$.