

COMPUTATIONAL PHYSICS (PH 3304)
AUTUMN SEMESTER (2021-22)
DEPARTMENT OF PHYSICS
NATIONAL INSTITUTE OF TECHNOLOGY, JAMSHEDPUR

TUTORIAL-2

Q.1: Solve the following system of equations by Gauss elimination method:

$$\begin{aligned}10x - y + 2z &= 4 \\ x + 10y - z &= 3 \\ 2x + 3y + 20z &= 7\end{aligned}$$

Q.2: Find the inverse of the coefficient matrix of the following system using Gauss-Jordan method.

$$\begin{bmatrix} 1 & 1 & 1 \\ 4 & 3 & -1 \\ 3 & 5 & 3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 1 \\ 6 \\ 4 \end{bmatrix}$$

Q.3: Solve the following equations by factorization method:

$$\begin{aligned}10x - 7y + 3z + 5u &= 6 \\ -6x + 8y - z - 4u &= 5 \\ 3x + y + 4z + 11u &= 2 \\ 5x - 9y - 2z + 4u &= 7\end{aligned}$$

Q.4: Find the inverse of the matrix $A = \begin{bmatrix} 3 & 2 & 1 \\ 2 & 3 & 2 \\ 1 & 2 & 2 \end{bmatrix}$ by LU decomposition method.
