



BHARATIYA VIDYA BHAVAN'S
SARDAR PATEL INSTITUTE OF TECHNOLOGY
MUNSHI NAGAR, ANDHERI (WEST), MUMBAI - 400 058, India
(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination October 2022

Max. Marks: 20

Class: SE EXTC(A & B)

Course Code: MA201

Subject :- Linear Algebra

Duration: 1 Hour

Semester: III

Date : 17/10 /22

Time: 10.00 to 11.00 a.m.

Instructions: (1) All questions are compulsory.

(2) Use of scientific calculator is allowed.

Q. No.	Questions	Max. Marks	CO
Q. 1	Apply Gauss-Seidel method to solve the equations $5x + 2y + z = 12$ $x + 4y + 2z = 15$ $x + 2y + 5z = 20$ Note : Take five iterations	5	CO 2
Q. 2	Is the matrix $A = \begin{bmatrix} 2 & 1 & 1 \\ 1 & 2 & 1 \\ 0 & 0 & 1 \end{bmatrix}$ diagonalisable? If so find the diagonal matrix and the transforming matrix.	6	CO 5
Q. 3	Find the characteristic equation of the matrix $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$ and verify that it is satisfied by A and hence obtain A^{-1} and A^4	6	CO 6
Q. 4	Show that the Eigen values of a unitary matrix are of unit modulus.	3	CO 6

***** The End *****