Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (W), Mumbai : 400058, India

(Autonomous College of Affiliated to University of Mumbai)

Mid Semester Examination

October 2023

Max Marks: 30 Duration: 1 hour

Class: F.Y.M.C.A. Semester: I

Course code: MA501

Name of the course: Linear Algebra

Q No		Max Marks	CO	BL
1.	Find the row echelon form of the $A=\begin{bmatrix} -1 & 2 & 3 & -2 \\ 2 & -5 & 1 & 2 \\ 3 & -8 & 5 & 2 \\ 5 & -12 & -1 & 6 \end{bmatrix}$. What is the rank of A?	07	1	2
2.	Find the the values of α and β for which the following system of equations is consistent: $2x_1 + 3x_2 + 5x_3 = 9,$ $7x_1 + 3x_2 - 2x_3 = 8,$ $2x_1 + 3x_2 + \alpha x_3 = \beta.$ OR Find the the values of λ for which the following system of equations is consistent and has a non trivial solution: $(\lambda - 1)x_1 + (3\lambda + 1)x_2 + 2\lambda x_3 = 0,$ $(\lambda - 1)x_1 + (4\lambda - 2)x_2 + (\lambda + 3)x_3 = 0,$ $2x_1 + (3\lambda + 1)x_2 + (3\lambda - 3)x_3 = 0.$	07	1	3
3.	Solve the following system of equations using Gauss elimination method: $2x + 3y + 4z = 11$ $x + 5y + 7z = 15$ $3x + 11y + 13z = 25.$	08	2	1
4.	Apply the Gauss Seidal method to solve the following system of equations upto four iterations. $x + 4y + 2z = 15$ $5x + 2y + z = 12$ $x + 2y + 5z = 20.$	08	2	1

ALL THE BEST