	School of Arts Sciences Humanities
	First CIA Test(CSBS) – April 2021
	Course Code:MAT134
	Course Name: Linear algebra
	Duration: 9.30 -11.00AM Max Marks: 50

SASTRA
ENGINEERING · MANAGEMENT · LAW · SCIENCES · HUMANITIES · EDUCATION
DEEMED TO BE UNIVERSITY
(U/S 3 OF THE UGC ACT. 1956)
THINK MERIT | THINK TRANSPARENCY | THINK SASTRA

PART A   **5 x 10 = 50 Marks**

Answer all the questions

1.	The elements of a matrix A may be functions of a variable t. Determine the solution of the differential equation $\frac{d^2y}{dt^2} + 4\frac{dy}{dt} - 12y = 0$, $y(0) = 0, y'(0) = 8$ by using the method of matrix
2.	Balance the chemical equation $C_3H_8 + O_2 \rightarrow CO_2 + H_2O$. Using the technique of matrix .
3	Solve the following system of equations by using Cramer's rule $x + y + z = 1$ ax+by+cz=k $a^2x + b^2y + c^2z = k^2$.
4.	Find the characteristic roots and the corresponding characteristic vectors of the matrix $\begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$
5.	Discuss for all values of M for the system of equations $x + y + 4z = 6$ $x + 2y - 2z = 6$ $mx + y + z = 6$.