THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"

GRADE: XII Date:	MT 2 (2024-25) APPLIED MATHEMATICS	Marks: 20 Time: 1 hours

Name:

Class & Section:

Q.No.	Questions	Mark
	SECTION A	
1	If A=$\begin{bmatrix}1 & 0\\0 & 0\end{bmatrix}$, then B= $\begin{bmatrix}0 & 0\\0 & 1\end{bmatrix}$ the value of AB is a) $\begin{bmatrix}1 & 0\\0 & 0\end{bmatrix}$ c) $\begin{bmatrix}0 & 0\\0 & 0\end{bmatrix}$ b) $\begin{bmatrix}1 & 1\\1 & 1\end{bmatrix}$ d) $\begin{bmatrix}0 & 0\\0 & 1\end{bmatrix}$	1
2	If A=$\begin{bmatrix}1 & 2\\3 & 4\end{bmatrix}$, then the value of $A+A^T$ a) $\begin{bmatrix}2 & 5\\5 & 8\end{bmatrix}$ c) $\begin{bmatrix}2 & 8\\5 & 5\end{bmatrix}$ b) $\begin{bmatrix}2 & 5\\8 & 5\end{bmatrix}$ d) $\begin{bmatrix}2 & -5\\5 & 8\end{bmatrix}$	1
3	If $\begin{bmatrix}p+q & 2\\5 & q\end{bmatrix}$= $\begin{bmatrix}6 & 2\\5 & 2\end{bmatrix}$ then the value of p is a) 4 c) 5 b) 6 d) 8	1
4	The value of the determinant $\begin{vmatrix}2 & 2 & 14\\1 & 3 & 21\\3 & 5 & 35\end{vmatrix}$ is a) 0 c) 14 b) 5 d) 35	1
5	If $A=\begin{bmatrix}5 & x\\y & 0\end{bmatrix}$ and $A=A^T$ then a) x=0 , y=5 c) x=5, y=0 b) x=y d) none of these	1
	SECTION B	
6	If A=$\begin{bmatrix}1 & 2 & 2\\2 & 1 & 2\\2 & 2 & 1\end{bmatrix}$ show that $A^2-4A-5I=0$	2

7	Find the adjoint of matrix A = $\begin{bmatrix} 1 & 2 \\ 3 & -5 \end{bmatrix}$	**2**
8	If A = $\begin{bmatrix} 2 & 4 \\ 3 & 2 \end{bmatrix}, B = \begin{bmatrix} 1 & 3 \\ -2 & 5 \end{bmatrix}$ $and\ C = \begin{bmatrix} -2 & 5 \\ 3 & 4 \end{bmatrix}$ $Find\ the\ following$ a) A+B b) 3A-C	**2**
	SECTION C	
9	Solve the following system of equations by cramer's rule $6x + y - 3z = 5$ $x + 3y - 2z = 5$ $2x + y + 4z = 8$	**3**
10	Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$ and verify that $A.A^{-1} = A^{-1}.A = I$	**3**
11	**CASE STUDY** For a two sector economy with production sector I and II, the intersectoral demand and final demand as follow:	

Producing sector	Receiving sector		Final demand
	I	II	
I	264	410	206
II	528	204	292

a) Find the technical coefficients. **1**
b) Find the matrix of technical coefficients. **1**
c) Find the Leontief matrix. **1**

Prepared by Checked by