THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"

AIM HIGH, TOGETHER WE FLY

Date: 11/07/22 **MONTHLY TEST -02 (2022-23)** **Max marks: 20**
GRADE: XIIA **MATHEMATICS [041]** **Time: 1 Hour**

General Instructions:
1) Questions 1 to 4 carries 1 mark each.
2) Questions 5 to 8 carries 2 marks each.
3) Questions 9 and 10 carries 4 marks each.
4) All questions are compulsory.

Sl.No	Questions	Marks
	SECTION A	
1	A is a matrix of order 3x3 , such that $\|A\|$ = 12. Find $\|A\,.\,adjA\,\|$. a) 144 b) 1728 c) 12 d) 1	1
2	Let A=$\{1,2,3\}$ and R = $\{(1,1),(3,3),(1,2)\}$ Choose the minimum number of terms so that the relation becomes equivalence relation. a) (2,2) b) (2,1) c) (2,1),(1,2),(1,3),(3,1),(2,2) d) (2,2) , (2,1)	1
3	Find x , if $[5\ -\ x\ x\ +\ 1\ 2\ 4\ ]$ is singular a) x= 0 b) x= -3 c) x = 3 d) x = 5 or -1	1
4	A = $\begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix}$ if A_{ij} is the cofactor of a_{ij}, find $a_{11}A_{21}+a_{12}A_{22}+a_{13}A_{23}$ a) 0 b) $\|A\|$ c) A d) $\|adjA\|$	1
	SECTION B	
5	If area of the triangle is 35sq.units with vertices (2,-6) ,(5,4) , (k,4).find the value of k.	2
6	Let f: N → N be defined by $f(n)=\begin{cases}\frac{n+1}{2}, if\ \ n\ \ is\ \ odd\\ \frac{n}{2}, if\ \ n\ \ is\ \ even\end{cases}$ $\forall n \in N$. Find whether the function f is bijective or not.	2

7	Let A = {1,2,3, ...,10} and R be the relation in A x A defined by (a, b) R (c, d) iff a + d = b + c for (a, b), (c, d) in A x A. Prove that R is a transitive relation. Also obtain the equivalence class [(3,4)].	2
8	$A = [3\ 1\ \ -1\ 2\ ]$ show that A^2-5A +7I = 0..Hence find A^{-1}.	2
	SECTION C	
9	$A = [4\ 1\ 2\ \ -5\ \ -3\ 3\ \ -11\ 1\ \ -7\ ]$find A^{-1} and hence solve 4x-5y-11z=12, x-3y+z=1, 2x+3y-7z =2	4
10	 Raji visited the Exhibition along with her family. The Exhibition had a huge swing, which attracted many children. Raji found that the swing traced the path of a Parabola as given by $y = x^2$. Answer the following questions using the above information.	4
	1. Let $f: R \to R$ be defined by $f(x)$ = x^2 is_____ a. Neither Surjective nor Injective b. Surjective c. Injective d. Bijective	
	2. Let $f: N \to N$ be defined by $f(x)$ = x^2 is _____ a. Surjective but not Injective b. Surjective c. Injective d. Bijective	
	3. Let f: {1,2,3,4....}→{1,4,9,16....} be defined by $f(x)$ = x^2 is _____ a. Bijective b. Surjective but not Injective c. Injective but not Surjective d. Neither Surjective nor Injective	
	4. Let : $N \to R$ be defined by $f(x)$ = x^2 . Range of the function among the following is _____ a. {1, 4, 9, 16,...} b. {1, 2,3,4,5,...} c. R (Set of real numbers) d. {1, $\sqrt{2}$, , $\sqrt{3}$, ...}	