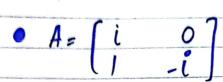
LGS GROUP OF COLLECTS							
LGS GROUP OF COLLEGES A PROJECT OF LAHORE GRAMMAR SCHOOL							
Name: 1 V 1001 (1007 KTOW Class 1 St 1001 Roll No. 240303							
Subject:	24						
ABOD ABOD ABOD Marks Obt	ained						
• Short Overtions							
· Servei Groups	: 11						
A semi group is a set w	<i>Th</i>						
an operation that is associative.							
• E·g:							
Set N= 30,1,2,3							
u ti acca	ciative,						
· In a semigroup, the operation is associated	that						
but you don't need an element acts as a neutral or identity for	-11. O						
acts as a neutral or identity for operation.	The						
operation.							
· · · · · · · · · · · · · · · · · · ·	-						
( ii )							
• Modulo 5							
4- 50-1-2-3-43							
$A = \{0, 1, 2, 3, 4, 3, \dots \}$							
$A = \{0, 1, 2, 3, 4\}$	*						
	4						
X 0 1 2 3 0 0 0 0	4 0						
X 0 1 2 3 0 0 0 0 0	4						
X 0 1 2 3 0 0 0 0							
X 0 1 2 3 0 0 0 0 0 1 0 1 2 3	4						

LGS GROUP OF COLLEGES APROJECT OF LAHORE GRAMMAR SCHOOL	Si
(iii	. )

Student Name: \_\_



$$A^2 = A \times A = \begin{bmatrix} i & 0 \\ i & -i \end{bmatrix} \times \begin{bmatrix} i & 0 \\ i & -i \end{bmatrix}$$

$$A^{2} = \begin{bmatrix} i^{2} + 0 & 0 + 0 \\ 1 - i & 0 + i^{2} \end{bmatrix}$$
 $A^{2} = \begin{bmatrix} -1 & 0 \end{bmatrix}$ 

$$A^{4} = A^{2} \times A^{2} = \begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix} \begin{bmatrix} 0 & -1 \\ 0 & -1 \end{bmatrix}$$

$$= \begin{bmatrix} 1+0 & 0+0 \\ 0+0 & 0+1 \end{bmatrix}$$

$$= \begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}$$

## · Long Questions

(i)

## • 12×2 matrices

Matrix multiplication is associative This
is a well-known property of matrices
in general

(AB)C = A(BC)



AX	Ι,	- I,	X	A	pt()	A
----	----	------	---	---	------	---

	2 15	He	iderdity	dement	for
ma	lrix	Hom	idendity		

$$A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$$
,  $B = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$ 

$$AB = \begin{cases} 1 & 1 \\ 0 & 1 \end{cases} \begin{cases} 1 & 0 \\ 1 & 1 \end{cases} = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix} = \begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix}$$

$$BA = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$$

T	sot of	all	2×2	non-si	ngular	matrices
CVOS	R	forms trix n	an	on-abe	lian gi	COUP
under	ma	trix n	nuttiplic	ation.		,
	The second secon		`			