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Assignment#4

Requirement:

Decrypt: ZAF STA PWH TXP LUX LBV ANK SUT QMO LLM FSL YAE FTW JPI

3 X 3 key MATRIX MOD 26:

Z	A	F	S	T	A	P	W	H	T
25	0	5	18	19	0	15	22	7	19

X	P	L	U	X	L	B	V	A
23	15	11	20	23	11	1	21	0

N	K	S	U	T	Q	M	O
13	10	18	20	19	16	12	14

L	L	M	F	S	L
11	11	12	5	18	11

Y	A	E	F	T	W	J	P	I
21	0	4	5	19	22	9	15	18

Key Inverse:

$$\begin{pmatrix} 4 & 9 & 15 \\ 15 & 17 & 6 \\ 24 & 0 & 17 \end{pmatrix}$$

Solutions:

ZAF

$(1, 2, 3) = (25\ 0\ 5)$

= (25x4+0x15+5x24 25x9+0x17+5x0 25x15+0x6+5x17) mod 26

= (220 225 460)

= (12 17 18)

= (M R S) M R S

STA

$(1, 2, 3) = (18\ 19\ 0)$

= (18x4+19x15+0x24 18x9+19x17+0x0 18x15+19x6+0x17) mod 26

= (357 485 384)

= (19 17 20)

= (T R U) T R U

PWH

$(1, 2, 3) = (15\ 22\ 7)$

= (15x4+22x15+7x24 15x9+22x17+7x0 15x15+22x6+7x17) mod 26

= (558 509 476)

= (12 15 8)

= (M P I) M P I

TXP

$(1, 2, 3) = (19\ 23\ 15)$

= (19x4+23x15+15x24 19x9+23x17+15x0 19x15+23x6+15x17) mod 26

= (781 562 678)

= (1 16 2)

= (B Q C) F Y O

LUX

$(1, 2, 3) = (11\ 20\ 23)$

= (11x4+20x15+23x24 11x9+20x17+23x0 11x15+20x6+23x17) mod 26

= (896 439 676)

= (12 23 0)

= (M X A) U P E

LBV

$(1, 2, 3) = (11\ 1\ 21)$

= (11x4+1x15+21x24 11x9+1x17+21x0 11x15+1x6+21x17) mod 26

= (563 116 528)

= (17 12 8)

= (R M I) R M I

ANK

$(1, 2, 3) = (0\ 13\ 10)$

= (0x4+13x15+10x24 0x9+13x17+10x0 0x15+13x6+10x17) mod 26

= (435 221 248)

= (19 13 14)

= (T N O) T N O

SUT

$(1, 2, 3) = (18\ 20\ 19)$

= (18x4+20x15+17x24 18x9+20x17+19x0 18x15+20x6+19x17) mod 26

= (780 502 713)

= (0 8 11)

= (A I L) W I L

QMO

$(1, 2, 3) = (16\ 12\ 14)$

$= (16x4+12x15+14x24 \quad 16x9+12x17+14x0 \quad 16x15+12x6+14x17) \bmod 26$

$= (580 \quad 348 \quad 550)$

$= (8 \quad 10 \quad 4)$

$= (I \quad K \quad E)$ I K E

LLM

$(1, 2, 3) = (11\ 11\ 12)$

$= (11x4+11x15+12x24 \quad 11x9+11x17+12x0 \quad 11x15+11x6+12x17) \bmod 26$

$= (497 \quad 286 \quad 435)$

$= (3 \quad 0 \quad 19)$

$= (D \quad A \quad T)$ D A T

FSL

$(1, 2, 3) = (5\ 18\ 11)$

$= (5x4+18x15+11x24 \quad 5x9+18x17+11x0 \quad 5x15+18x6+11x17) \bmod 26$

$= (554 \quad 351 \quad 365)$

$= (8 \quad 13 \quad 1)$

$= (I \quad N \quad B)$ I N G

YAE

$(1, 2, 3) = (21\ 0\ 4)$

$= (21x4+0x15+4x24 \quad 21x9+0x17+4x0 \quad 21x15+0x6+4x17) \bmod 26$

$= (180 \quad 189 \quad 383)$

$= (24 \quad 7 \quad 19)$

$= (Y \quad H \quad T)$ K I M

FTW

$(1, 2, 3) = (5\ 19\ 22)$

$= (5x4+19x15+22x24 \quad 5x9+19x17+22x0 \quad 5x15+19x6+22x17) \bmod 26$

$= (833 \quad 368 \quad 505)$

$= (1 \quad 4 \quad 11)$

= (B E T) B E R

JPI

$(1, 2, 3) = (9\ 15\ 18)$

$= (9x4+15x15+18x24 \quad 9x9+15x17+18x0 \quad 9x15+15x6+18x17) \bmod 26$

$= (693 \quad 336 \quad 531)$

$= (17 \quad 24 \quad 11)$

= (R Y L) L Y X

FINAL ANSWER: MRS TRU MPI BQC MXA RMI TNO AIL IKE DAT INB YHT BET RYL