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Tugas

1. Buat satu kalimat sederhana (min 3 kata & total min 15 huruf), enkripsikan dengan Affine Cipher dan kembalikan menjadi plainteks

Jawaban

1.

Enkripsi :

F	A	R		E	A	S	T		P	R	I	N	C	E	S	S
5	0	17		4	0	18	19		15	17	8	13	2	4	18	18

Key : a=5 b=12

$$\begin{aligned} E(5) &= (5(5) + 12) \bmod 26 = 37 \bmod 26 = 11 \rightarrow L \\ E(0) &= (5(0) + 12) \bmod 26 = 12 \bmod 26 = 12 \rightarrow M \\ E(17) &= (5(17) + 12) \bmod 26 = 97 \bmod 26 = 19 \rightarrow T \\ E(4) &= (5(4) + 12) \bmod 26 = 32 \bmod 26 = 6 \rightarrow G \\ E(0) &= (5(0) + 12) \bmod 26 = 12 \bmod 26 = 12 \rightarrow M \\ E(18) &= (5(18) + 12) \bmod 26 = 102 \bmod 26 = 24 \rightarrow Y \\ E(19) &= (5(19) + 12) \bmod 26 = 107 \bmod 26 = 3 \rightarrow D \\ E(15) &= (5(15) + 12) \bmod 26 = 87 \bmod 26 = 9 \rightarrow J \\ E(17) &= (5(17) + 12) \bmod 26 = 97 \bmod 26 = 19 \rightarrow T \\ E(8) &= (5(8) + 12) \bmod 26 = 52 \bmod 26 = 0 \rightarrow A \\ E(13) &= (5(13) + 12) \bmod 26 = 77 \bmod 26 = 25 \rightarrow Z \\ E(2) &= (5(2) + 12) \bmod 26 = 22 \bmod 26 = 22 \rightarrow W \\ E(4) &= (5(4) + 12) \bmod 26 = 32 \bmod 26 = 6 \rightarrow G \\ E(18) &= (5(18) + 12) \bmod 26 = 102 \bmod 26 = 24 \rightarrow Y \\ E(18) &= (5(18) + 12) \bmod 26 = 102 \bmod 26 = 24 \rightarrow Y \end{aligned}$$

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Dekripsi

Mencari a^{-1} :

$\gcd(5, 26)$

$$26 = 5 * 5 + 1$$

$$5 = 5 * 1 + 0$$

$$t_0 = 0 \quad t_1 = 1$$

$$t_2 = (0 - (5 * 1)) \bmod 26 = -5 \bmod 26 = 21$$

$$a^{-1} = 21$$

L	M	T		G	M	Y	D		J	T	A	Z	W	G	Y	Y
11	12	19		6	12	24	3		9	19	0	25	22	6	24	24

$$E(11) = 21(11 - 12) \bmod 26 = -21 \bmod 26 = 5 \rightarrow F$$

$$E(12) = 21(12 - 12) \bmod 26 = 0 \bmod 26 = 0 \rightarrow A$$

$$E(19) = 21(19 - 12) \bmod 26 = 147 \bmod 26 = 17 \rightarrow R$$

$$E(6) = 21(6 - 12) \bmod 26 = -126 \bmod 26 = 4 \rightarrow E$$

$$E(12) = 21(12 - 12) \bmod 26 = 0 \bmod 26 = 0 \rightarrow A$$

$$E(24) = 21(24 - 12) \bmod 26 = 252 \bmod 26 = 18 \rightarrow S$$

$$E(3) = 21(3 - 12) \bmod 26 = -189 \bmod 26 = 19 \rightarrow T$$

$$E(9) = 21(9 - 12) \bmod 26 = -63 \bmod 26 = 15 \rightarrow P$$

$$E(19) = 21(19 - 12) \bmod 26 = 147 \bmod 26 = 17 \rightarrow R$$

$$E(0) = 21(0 - 12) \bmod 26 = -252 \bmod 26 = 8 \rightarrow I$$

$$E(25) = 21(25 - 12) \bmod 26 = 273 \bmod 26 = 13 \rightarrow N$$

$$E(22) = 21(22 - 12) \bmod 26 = 210 \bmod 26 = 2 \rightarrow C$$

$$E(6) = 21(6 - 12) \bmod 26 = -126 \bmod 26 = 4 \rightarrow E$$

$$E(24) = 21(24 - 12) \bmod 26 = 252 \bmod 26 = 18 \rightarrow S$$

$$E(24) = 21(24 - 12) \bmod 26 = 252 \bmod 26 = 18 \rightarrow S$$

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