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Вариант-3

№	Ответ
1	A3E9
2	10(0); 01(K); 00(L); 111(N); 110(O); 1101(P); 1100(T)
3	209
4	(3; 1; 4)

Дано

$$e = 7$$

$$m = 77$$

$$(51, 34, 28, 22)$$

Переменные

$$1) de \equiv 1 \pmod{\varphi(m)}$$

$$\varphi(77) = \varphi(7) \cdot \varphi(11) = 6 \cdot 10 = 60$$

$$7d \equiv 1 \pmod{60}$$

$$7d - 60y = 1$$

$$7d + 60y = 1$$

$$\begin{array}{r} 77 \\ 60 \\ 17 \\ 17 \\ 17 \\ 17 \end{array} \begin{array}{r} 1 \\ 0 \\ 1 \\ -1 \\ 2 \end{array}$$

$$\begin{array}{r} 77 \\ 60 \\ 17 \\ 17 \\ 17 \\ 17 \end{array} \begin{array}{r} 1 \\ 0 \\ 1 \\ -1 \\ 2 \end{array}$$

$$d \equiv -18 \pmod{60}$$

$$d = 43$$

$$2) a^d \bmod m$$

$$51^{43} \bmod 77 = 2$$

$$37^{43} \bmod 77 = 9$$

$$27^{43} \bmod 77 = 7$$

$$22^{43} \bmod 77 = 22$$

$$(2, 9, 7, 22)$$

$$A \ B \ E \ P$$

$$\text{Омбери: } A \ B \ E \ P$$

$$2) 88(K); 83(L); 36(M); 24(N); 97(O); 35(P); 23(P).$$

$$97(O); 88(K); 83(L); 36(M); 35(P); 23(P); 21(N)$$

$$97(O); 88(K); 83(L); 44(PH); 36(M); 35(P)$$

$$97(O); 88(K); 83(L); 77(MN); 44(PH)$$

$$115(MPH); 97(O); 88(K); 83(L)$$

$$777(KL); 115(MPH); 97(O)$$

$$212(MPHO); 777(KL)$$

$$0(KL); 1(MPHO)$$

$$0(KL); 10(O); 11(MPH)$$

01(K), 00(L), 10(O), 111(M), 110(PH)
01(K), 00(L), 10(O), 110(PH), 111(M), 110(P)
01(K), 00(L), 10(O), 111(M), 110(P), 110(P)
Omberm → 1100(H).

(3) 10111001
0123456x

$$\Rightarrow 11010001_2 = 209_{10}$$

④ Дина 3 \mathbb{Z}_5

$P(x)$ - указатель на $\deg s_2$

$$D(x) \geq 0 \text{ deg } x \leq d$$

$$Q(x) = D(x)P(x) \equiv D(x)P(x)$$

$$\begin{array}{lcl} x_1 = 0 & q_0 \geq -4d & (1) \\ x_2 = 1 & q_0 + q_1 + q_2 + q_3 \leq 1 - d & (2) \\ x_3 = 2 & q_0 + 2q_1 + 4q_2 + 3q_3 \leq 6 - 3d & (3) \\ x_4 = -2 & q_0 - 2q_1 + 4q_2 - q_3 \leq -8 - 4d & (4) \\ x_5 = -1 & q_0 - q_1 + q_2 - q_3 \leq -1 - d & (5) \end{array}$$

$$(11) + (14) = 2q_0 + 2q_2 = -2d$$

$$q_2 = 3d$$

$$(11) - (14) = 2q_1 + 2q_3 = 2$$

$$q_3 = 1 - q_1$$

$$-4d + 2q_1 + 12d + 3 - 3q_1 = 6 - 3d$$

$$-q_1 + 8d + 3 = 6 - 3d$$

$$q_1 = 2 + d$$

$$q_3 = 4 - d = 4 + 4d$$

$$q_0 + 2q_1 + 4q_2 + 3q_3 = 6 - 3d$$

$$q_0 - 2q_1 + 4q_2 - 3q_3 = -8 - 4d$$

$$4(-3+d) + 6(4-d) = 14 + d$$

$$12 - 2d = 14 + d$$

$$-2 = 3d$$

$$d = -\frac{2}{3} \pmod{5} = 1$$

$$q_0 = -4 = 1$$

$$q_1 = 3$$

$$q_2 = 3$$

$$q_3 = 3$$

$$\begin{array}{r|l} 3x^3 + 3x^2 + 3x + 1 & x-1 \\ \underline{3x^3 + 2x^2} & \\ -x^2 + 3x & \\ \underline{x^2 + 4x} & \\ -4x + 1 & \\ \underline{4x + 1} & \\ 0 & \end{array}$$

$$3x^2 + x + 4$$

$$(3, 1, 4)$$

$$\text{Ans: } (3, 1, 4)$$