Чистякова Юлия – 3 курс 5 группа (ПОИТ) **выполнено самостоятельно**

**1) В чем особенность сложения чисел по модулю 2N?**  
\* самое большое слагаемое меньше 2N  
\* результат сложения – n-разрядное число  
\* побитовое сложение предусматривает известную взаимосвязь между соседними символами (порядками)  
\* результат вычисления A+B(mod 2n) это остаток от деления: (A+B)/2n

**2) Сложить по модулю 102 пары чисел: 55 и 14; 76 и 24; 99 и 99**

\* 55 + 14 (mod 100) = 69 (mod 100) = 69

\* 76 + 24 (mod 100) = 100 (mod 100) = 0

\* 99 + 99 (mod 100) = 198 (mod 100) = 98

**3) Сложить по модулю 28 (256) числа:**

***\* двоичные числа 10101100 и 11001010:***  
 , ,  
 1 0 1 0 1 1 0 0   
+ 1 1 0 0 1 0 1 0  
 1 **0 1 1 1 0 1 1 0**

Т.к. ищем сумму по модулю 28, то искомое двоичное число – 8 младших разрядов, т.е. **01101102 (11810)**

***\* 01111111 и 01101101:***

0 1 1 1 1 1 1 1   
+ 0 1 1 0 1 1 0 1  
 **1 1 1 0 1 1 0 0**

Искомое число – **111011002 (23610)**

***\* шестнадцатиричные числа 0B5 и 37:***

Переведем числа 0B5 и 37 из 16-ричной в двоичную систему исчисления:

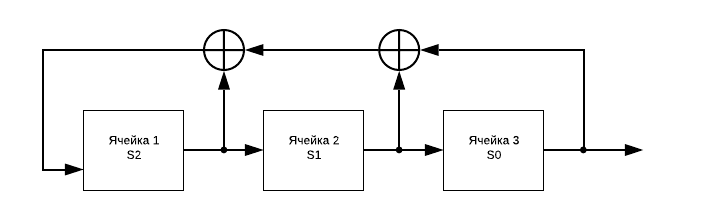
|  |  |
| --- | --- |
| 0 –> 00002 B (11) = 8 + 2 + 1 –> 10112 5 = 4 + 1 –> 01012 | 3 = 2 + 1 –> 0011 7 = 4 + 2 + 1 –> 0111 |

Найдем сумму чисел в двоичной СС:  
 , , , , ,  
 0 0 0 0 1 0 1 1 0 1 0 1  
+ 0 0 0 0 0 0 1 1 0 1 1 1  
 0 0 0 0 **1 1 1 0 1 1 0 0**

Искомое число – **1110 11002** (EC16) (23610)

7) Синтезировать структурную схему генератора ПСП на основе регистров сдвига с линейной обратной связью, формально обозначаемого следующим образом: а) 3210, б) 420, в) 5410, г) 520, д) 84320. Составить таблицу состояний генератора и определить период ПСП.

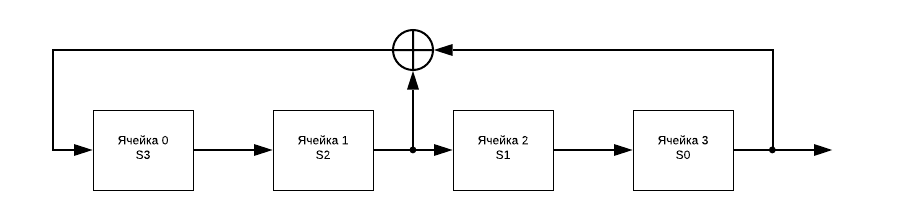
* 1. 3210



|  |  |  |  |
| --- | --- | --- | --- |
| Цикл | S2 | S1 | S0 |
| 0 | 0 | 0 | 1 |
| 1 | 1 | 0 | 0 |
| 2 | 1 | 1 | 0 |
| 3 | 0 | 1 | 1 |
| 4 | 0 | 0 | 1 |

Период = 4

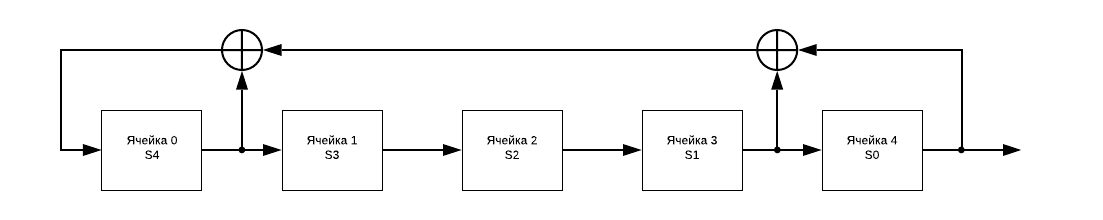
* 1. 420



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Цикл** | **S3** | **S2** | **S1** | **S0** |
| 0 | 0 | 0 | 0 | 1 |
| 1 | 1 | 0 | 0 | 0 |
| 2 | 0 | 1 | 0 | 0 |
| 3 | 1 | 0 | 1 | 0 |
| 4 | 0 | 1 | 0 | 1 |
| 5 | 0 | 0 | 1 | 0 |
| 6 | 0 | 0 | 0 | 1 |

Период = 6

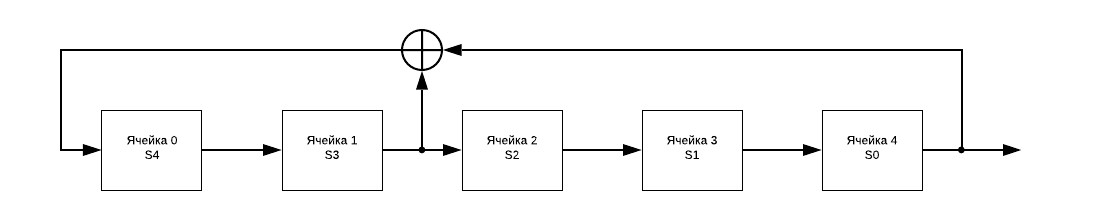
* 1. 5410



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Цикл** | **S4** | **S3** | **S2** | **S1** | **S0** |
| 0 | 0 | 0 | 0 | 0 | 1 |
| 1 | 1 | 0 | 0 | 0 | 0 |
| 2 | 1 | 1 | 0 | 0 | 0 |
| 3 | 1 | 1 | 1 | 0 | 0 |
| 4 | 1 | 1 | 1 | 1 | 0 |
| 5 | 0 | 1 | 1 | 1 | 1 |
| 6 | 0 | 0 | 1 | 1 | 1 |
| 7 | 0 | 0 | 0 | 1 | 1 |
| 8 | 0 | 0 | 0 | 0 | 1 |

Период = 8

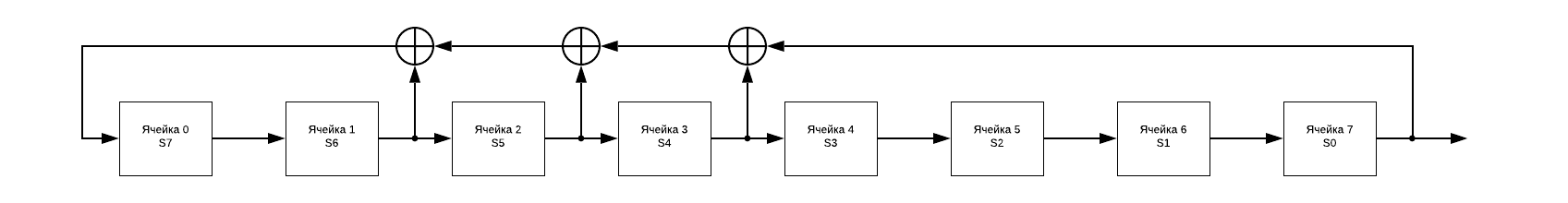
* 1. 520



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Цикл** | **S4** | **S3** | **S2** | **S1** | **S0** |
| 0 | 0 | 0 | 0 | 0 | 1 |
| 1 | 1 | 0 | 0 | 0 | 0 |
| 2 | 0 | 1 | 0 | 0 | 0 |
| 3 | 1 | 0 | 1 | 0 | 0 |
| 4 | 0 | 1 | 0 | 1 | 0 |
| 5 | 1 | 0 | 1 | 0 | 1 |
| 6 | 1 | 1 | 0 | 1 | 0 |
| 7 | 1 | 1 | 1 | 0 | 1 |
| 8 | 0 | 1 | 1 | 1 | 0 |
| 9 | 1 | 0 | 1 | 1 | 1 |
| 10 | 1 | 1 | 0 | 1 | 1 |
| 11 | 0 | 1 | 1 | 0 | 1 |
| 12 | 0 | 0 | 1 | 1 | 0 |
| 13 | 0 | 0 | 0 | 1 | 1 |
| 14 | 1 | 0 | 0 | 0 | 1 |
| 15 | 1 | 1 | 0 | 0 | 0 |
| 16 | 1 | 1 | 1 | 0 | 0 |
| 17 | 1 | 1 | 1 | 1 | 0 |
| 18 | 1 | 1 | 1 | 1 | 1 |
| 19 | 0 | 1 | 1 | 1 | 1 |
| 20 | 0 | 0 | 1 | 1 | 1 |
| 21 | 1 | 0 | 0 | 1 | 1 |
| 22 | 1 | 1 | 0 | 0 | 1 |
| 23 | 0 | 1 | 1 | 0 | 0 |
| 24 | 1 | 0 | 1 | 1 | 0 |
| 25 | 0 | 1 | 0 | 1 | 1 |
| 26 | 0 | 0 | 1 | 0 | 1 |
| 27 | 1 | 0 | 0 | 1 | 0 |
| 28 | 0 | 1 | 0 | 0 | 1 |
| 29 | 0 | 0 | 1 | 0 | 0 |
| 30 | 0 | 0 | 0 | 1 | 0 |
| 31 | 0 | 0 | 0 | 0 | 1 |

Период = 31

* 1. 84320



|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Цикл** | **S7** | **S6** | **S5** | **S4** | **S3** | **S2** | **S1** | **S0** |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
|  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
|  | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
|  | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
|  | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
|  | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |
|  | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
|  | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
|  | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
|  | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |
|  | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
|  | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
|  | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
|  | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
|  | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
|  | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
|  | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
|  | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
|  | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
|  | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
|  | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
|  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
|  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|  | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
|  | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
|  | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
|  | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
|  | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
|  | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
|  | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
|  | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
|  | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
|  | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
|  | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
|  | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
|  | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
|  | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
|  | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
|  | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
|  | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
|  | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
|  | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
|  | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
|  | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
|  | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
|  | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
|  | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
|  | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
|  | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
|  | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
|  | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
|  | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
|  | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
|  | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
|  | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
|  | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
|  | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |
|  | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 |
|  | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |
|  | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
|  | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
|  | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
|  | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
|  | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
|  | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
|  | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
|  | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
|  | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
|  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
|  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
|  | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
|  | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
|  | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
|  | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
|  | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
|  | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
|  | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
|  | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
|  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
|  | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
|  | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
|  | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
|  | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
|  | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
|  | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
|  | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
|  | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
|  | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
|  | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
|  | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
|  | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
|  | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
|  | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
|  | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
|  | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
|  | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
|  | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
|  | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
|  | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
|  | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
|  | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
|  | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
|  | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
|  | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
|  | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
|  | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
|  | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
|  | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
|  | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |
|  | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
|  | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
|  | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
|  | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
|  | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
|  | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
|  | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
|  | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
|  | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
|  | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
|  | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 |
|  | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
|  | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
|  | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
|  | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
|  | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
|  | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
|  | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
|  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
|  | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
|  | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
|  | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
|  | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
|  | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
|  | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
|  | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
|  | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
|  | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
|  | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
|  | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
|  | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
|  | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
|  | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
|  | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
|  | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
|  | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
|  | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
|  | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
|  | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
|  | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
|  | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
|  | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
|  | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
|  | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
|  | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
|  | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
|  | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
|  | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
|  | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
|  | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
|  | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
|  | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
|  | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
|  | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
|  | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
|  | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
|  | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
|  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
|  | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
|  | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
|  | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
|  | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
|  | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
|  | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
|  | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
|  | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 |
|  | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
|  | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
|  | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
|  | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
|  | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
|  | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
|  | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
|  | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
|  | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
|  | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
|  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
|  | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
|  | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
|  | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
|  | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
|  | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
|  | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
|  | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
|  | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
|  | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
|  | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
|  | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
|  | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |
|  | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
|  | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
|  | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
|  | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 |
|  | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
|  | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
|  | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

Период = 255

8) Определить первые 12 бит ПСП, задаваемого формально в виде чисел 5410, если начальные состояния ячеек (слева-направо) соответствуют последовательности 10101.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Цикл** | **S4** | **S3** | **S2** | **S1** | **S0** |
| 0 | 1 | 0 | 1 | 0 | 1 |
| 1 | 0 | 1 | 0 | 1 | 0 |
| 2 | 1 | 0 | 1 | 0 | 1 |
| 3 | 0 | 1 | 0 | 1 | 0 |
| 4 | 1 | 0 | 1 | 0 | 1 |
| 5 | 0 | 1 | 0 | 1 | 0 |
| 6 | 1 | 0 | 1 | 0 | 1 |
| 7 | 0 | 1 | 0 | 1 | 0 |
| 8 | 1 | 0 | 1 | 0 | 1 |
| 9 | 0 | 1 | 0 | 1 | 0 |
| 10 | 1 | 0 | 1 | 0 | 1 |
| 11 | 0 | 1 | 0 | 1 | 0 |

Ответ: 101010101010

**ДОМАШНЕЕ ЗАДАНИЕ: (выполнено самостоятельно)**

1) Записать двоичное представление чисел: день рожд|месяц рожд:  
 10 июля: 10 – 1010, 7 – 111, двоичное представление: 1010111

2) Подсчитать кол-во символов (n) в двоичном числе: n = 7

3) Выполнить сложение 6 разных пар чисел (a и b) длиной n двоичных разрядов по модулю 2n, складываемые числа должны удовлетворять условиям: 2 пары чисел в сумме дают число с < 2n, 2 пары чисел дают число c = 2n, 2 пары – дают число > 2n

27 = 128 = 1000 0000

1) 0 1 0 0 0 1 0  
 + 0 0 1 0 0 1 1  
 0 1 1 0 1 0 1 (53) Сумма по модулю 2n = 0110101 (53)

2) 0 0 0 0 1 1 1  
 + 1 1 1 0 0 1 1  
 1 1 1 1 0 1 0 (122) Сумма по модулю 2n = 1111010 (122)

3) 0 1 0 0 1 1 0  
 + 1 0 1 1 0 1 0  
 1 0 0 0 0 0 0 0 (128) Сумма по модулю 2n = 0

4) 1 0 1 0 1 0 1  
 + 0 1 0 1 0 1 1   
 1 0 0 0 0 0 0 0 (128) Сумма по модулю 2n = 0

5) 1 0 1 1 1 0 1  
 + 1 0 0 0 1 1 0  
 1 0 1 0 0 0 1 1 (163) Сумма по модулю 2n = 0100011 (35)

6) 1 1 0 0 0 0 1  
 + 1 1 1 1 1 1 0  
 1 1 0 1 1 1 1 1 (223) Сумма по модулю 2n = 1011111 (95)