Курсовая работа по дискретной математике

«Синтез комбинационных схем»

Часть 1

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Вариант 111

# Условие

|  |  |
| --- | --- |
| f = 1 | f = d |
| (X1X2 + X3X4X5) = 1, 5, 6, 7, 8 | (X3X4X5) = 6 |

# Таблица истинности

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **N** | **X1X2X3X4X5** | **X1X2** | **(X1X2)10** | **X3X4X5** | **(X3X4X5)10** | **+** | **f** |
| 0 | 00000 | 00 | 0 | 000 | 0 | 0 | 0 |
| 1 | 00001 | 00 | 0 | 001 | 1 | 1 | 1 |
| 2 | 00010 | 00 | 0 | 010 | 2 | 2 | 0 |
| 3 | 00011 | 00 | 0 | 011 | 3 | 3 | 0 |
| 4 | 00100 | 00 | 0 | 100 | 4 | 4 | 0 |
| 5 | 00101 | 00 | 0 | 101 | 5 | 5 | 1 |
| 6 | 00110 | 00 | 0 | 110 | 6 | 6 | d |
| 7 | 00111 | 00 | 0 | 111 | 7 | 7 | 1 |
| 8 | 01000 | 01 | 1 | 000 | 0 | 1 | 1 |
| 9 | 01001 | 01 | 1 | 001 | 1 | 2 | 0 |
| 10 | 01010 | 01 | 1 | 010 | 2 | 3 | 0 |
| 11 | 01011 | 01 | 1 | 011 | 3 | 4 | 0 |
| 12 | 01100 | 01 | 1 | 100 | 4 | 5 | 1 |
| 13 | 01101 | 01 | 1 | 101 | 5 | 6 | 1 |
| 14 | 01110 | 01 | 1 | 110 | 6 | 7 | d |
| 15 | 01111 | 01 | 1 | 111 | 7 | 8 | 1 |
| 16 | 10000 | 10 | 2 | 000 | 0 | 2 | 0 |
| 17 | 10001 | 10 | 2 | 001 | 1 | 3 | 0 |
| 18 | 10010 | 10 | 2 | 010 | 2 | 4 | 0 |
| 19 | 10011 | 10 | 2 | 011 | 3 | 5 | 1 |
| 20 | 10100 | 10 | 2 | 100 | 4 | 6 | 1 |
| 21 | 10101 | 10 | 2 | 101 | 5 | 7 | 1 |
| 22 | 10110 | 10 | 2 | 110 | 6 | 8 | d |
| 23 | 10111 | 10 | 2 | 111 | 7 | 9 | 0 |
| 24 | 11000 | 11 | 3 | 000 | 0 | 3 | 0 |
| 25 | 11001 | 11 | 3 | 001 | 1 | 4 | 0 |
| 26 | 11010 | 11 | 3 | 010 | 2 | 5 | 1 |
| 27 | 11011 | 11 | 3 | 011 | 3 | 6 | 1 |
| 28 | 11100 | 11 | 3 | 100 | 4 | 7 | 1 |
| 29 | 11101 | 11 | 3 | 101 | 5 | 8 | 1 |
| 30 | 11110 | 11 | 3 | 110 | 6 | 9 | d |
| 31 | 11111 | 11 | 3 | 111 | 7 | 10 | 0 |

# Аналитический вид

**КДНФ**:

**ККНФ:**

# Минимизация булевой функции методом Квайна--Мак-Класки

Максимальные кубы:

