

Практическая работа №5

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Вариант 2.

Дана функция(ДНФ): $\bar{A}B + BA\bar{C}\bar{D} + BDA$

№	A	B	C	D	F	СДНФ	СКНФ
0	0	0	0	0	0		$\bar{A}\bar{B}\bar{C}\bar{D}$
1	0	0	0	1	0		$\bar{A}\bar{B}\bar{C}D$
2	0	0	1	0	1	$\bar{A}\bar{B}C\bar{D}$	
3	0	0	1	1	1	$\bar{A}\bar{B}CD$	
4	0	1	0	0	0		$\bar{A}B\bar{C}\bar{D}$
5	0	1	0	1	1	$\bar{A}B\bar{C}D$	
6	0	1	1	0	1	$\bar{A}BC\bar{D}$	
7	0	1	1	1	1	$\bar{A}BCD$	
8	1	0	0	0	0		$A\bar{B}\bar{C}\bar{D}$
9	1	0	0	1	0		$A\bar{B}\bar{C}D$
10	1	0	1	0	0		$A\bar{B}C\bar{D}$
11	1	0	1	1	0		$A\bar{B}CD$
12	1	1	0	0	1	$AB\bar{C}\bar{D}$	
13	1	1	0	1	0		$AB\bar{C}D$
14	1	1	1	0	0		$ABCD$
15	1	1	1	1	0		$ABCD$

Таблица 1: Таблица истинности

Формулы:

СДНФ: $F = \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}CD + \bar{A}B\bar{C}D + \bar{A}BC\bar{D} + AB\bar{C}\bar{D} + \bar{A}BCD$

СКНФ: $F = ABCD + ABC\bar{D} + A\bar{B}CD + \bar{A}BCD + \bar{A}BC\bar{D} + \bar{A}B\bar{C}D + \bar{A}B\bar{C}\bar{D} + \bar{A}\bar{B}\bar{C}\bar{D}$

$F = \sum_{i=0}^6 (3, 4, 6, 7, 8, 13)$

$F = \prod_{i=0}^{10} (0, 1, 3, 4, 5, 6, 10, 13, 14, 15)$

Карты Карно

СДНФ: $F = \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}CD + \bar{A}B\bar{C}D + \bar{A}BC\bar{D} + AB\bar{C}\bar{D} + \bar{A}BCD$

		$\overline{\hspace{1cm}}$		C	
		$\overline{\hspace{1cm}}$		D	
$\overline{\hspace{1cm}}$	B	0	4	12	8
		1	5	13	9
		3	7	15	11
		2	6	14	10

СКНФ: $F = ABCD + ABC\bar{D} + \bar{A}\bar{B}CD + \bar{A}BCD + \bar{A}BC\bar{D} + \bar{A}B\bar{C}D + \bar{A}B\bar{C}\bar{D} + \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}C\bar{D}$

		$\overline{\hspace{1cm}}$		C	
		$\overline{\hspace{1cm}}$		D	
$\overline{\hspace{1cm}}$	B	0	4	12	8
		1	5	13	9
		3	7	15	11
		2	6	14	10