Контрольная работа №2

Вариант №3

2)

A	B	C	$(\bar{A} \& B) \vee (B \& \bar{C})$
0	0	0	1
1	0	0	1
0	1	0	1
0	0	1	1
1	1	0	1
1	0	1	1
0	1	1	1
1	1	1	0

3)

	x	y	z	f(x,y,z)
0	0	0	0	1
1	0	0	1	0
2	0	1	0	0
3	0	1	1	1
4	1	0	0	0
5	1	0	1	0

$\bar{x} \& \bar{y} \& \bar{z}$

$\bar{x} \& y \& z$

6	1	1	0	1	$x \hat{\&} y \hat{\&} \bar{z}$
7	1	1	1	1	$x \hat{\&} y \hat{\&} z$

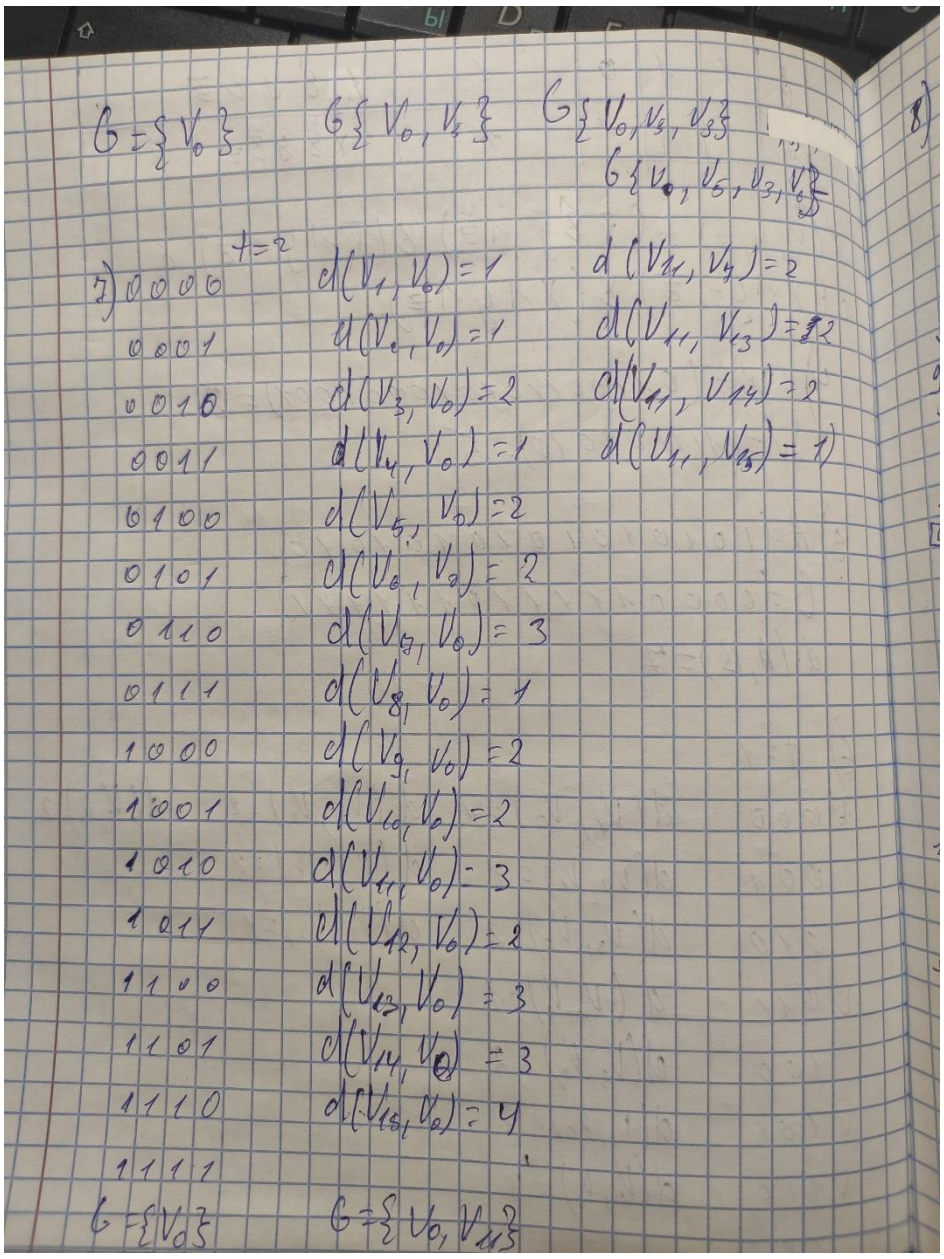
$f(x,y,z) = (\bar{x} \wedge y \wedge \bar{z}) \& (\bar{x} \wedge y \wedge z) \&$
$\& (x \wedge y \wedge \bar{z}) \& (x \wedge y \wedge z).$

4) $W = (0110011010101000 1001) = 8$
$W = (1111000 10) = 5$

5) $A = (1010101010101010)$
$B = (0000111111011111)$
$d(A,B) = 7$

6) $T = 1$

V_0 000 $d(V_1, V_0) = 1$ $d(V_5, V_3) = 2$ $d(V_3, V_5) = 2$
001 $d(V_2, V_0) = 1$ $d(V_5, V_6) = 2$
010 $d(V_3, V_0) = 2$ $d(V_5, V_6) = 1$
V_4 011 $d(V_4, V_0) = 1$
100 $d(V_5, V_0) = 2$
V_6 101 $d(V_6, V_0) = 2$
V_7 110 $d(V_7, V_0) = 3$
111



$G = \{V_0\}$

$G\{V_0, V_2\}$

$G\{V_0, V_3, V_{33}\}$

$G\{V_0, V_5, V_3, V_6\}$

8)

$t=2$

0000	$d(V_1, V_0) = 1$	$d(V_{11}, V_4) = 2$
0001	$d(V_2, V_0) = 1$	$d(V_{11}, V_{13}) = 2$
0010	$d(V_3, V_0) = 2$	$d(V_{11}, V_{14}) = 2$
0011	$d(V_4, V_0) = 1$	$d(V_{11}, V_{15}) = 1$
0100	$d(V_5, V_0) = 2$	
0101	$d(V_6, V_0) = 2$	
0110	$d(V_7, V_0) = 3$	
0111	$d(V_8, V_0) = 1$	
1000	$d(V_9, V_0) = 2$	
1001	$d(V_{10}, V_0) = 2$	
1010	$d(V_{11}, V_0) = 3$	
1011	$d(V_{12}, V_0) = 2$	
1100	$d(V_{13}, V_0) = 3$	
1101	$d(V_{14}, V_0) = 3$	
1110	$d(V_{15}, V_0) = 4$	
1111		

$G = \{V_0\}$

$G = \{V_0, V_{11}\}$

8) $P = [\log_2(1+1)] = 1$

$P_3 [\log_2 4] = 2$

$P_{16} [\log_2 16] = 4$

$P_{22} [\log_2 23] = 5$

9) $M = 10111 \quad P_5 = [\log_2 6] = 4$

$M_x = 10111000$

1	2	3	4	5	6	7	8	9
0	1	0	1	1	1	0	0	0

⑦

0	0	1	1
0	1	0	1
0	1	1	0

⑩ 1111 1011 0010 1100 0101

1100 111

$j_1 = 1+1+0+1+1+1+1+0+0+0+1+0+1+1+1 = 1$

$j_2 = 1+1+0+1+0+1+1+0+0+1+0+1+1 = 1$

$j_3 = 1+1+0+1+0+1+1+0+1+1+1+0 = 0$

$j_4 = 0+0+1+0+1+1+0+0+1+1+1 =$
$= 0$

$j_5 = 0+0+1+0+1+1+1+0+0+1+1+1 = 1$

$j = 11001_2 = 25$

Ошибка в 25 разряде, меняем 1 на 0.

1111 1011 0010 1100 0101 1100 011.

11)

$$G = \left\| \begin{matrix} 1&0&0 \\ 0&1&0 \\ 0&0&1 \end{matrix} \begin{matrix} 1&1&0 \\ 0&1&1 \\ 1&0&1 \end{matrix} \right\|$$

$$H = \begin{pmatrix} 1&0&1&1&0&0 \\ 1&1&0&0&1&0 \\ 0&1&1&0&0&1 \end{pmatrix} \qquad H^T = \begin{pmatrix} 1&1&0 \\ 0&1&1 \\ 1&0&1 \\ 1&0&0 \\ 0&1&0 \\ 0&0&1 \end{pmatrix}$$

$$\begin{array}{r} \oplus\ 1\,0\,0\,1\,1\,0 \\ \quad 0\,1\,0\,0\,1\,1 \\ \hline 1\,1\,0\,1\,0\,1 \end{array}$$

$a = 110101$

$\tilde{a} = 010101$

$\tilde{a} H^T = (0\cdot1 \oplus 1\cdot0 \oplus 0\cdot1 \oplus 1\cdot1 \oplus 0\cdot0 \oplus 1\cdot0 = 1$

$0\cdot1 \oplus 1\cdot1 \oplus 0\cdot0 \oplus 1\cdot0 \oplus 0\cdot1 \oplus 1\cdot0 = 1$

$0 \cdot 0 \oplus 1 \cdot 1 \oplus 0 \cdot 0 \oplus 1 \cdot 0 \oplus 0 \cdot 0 \oplus 1 \cdot 1 = 0) = 110$

110 соответствует 100, данного бита.

1) $A \vee \bar{A} \wedge (B \wedge 1 \vee A \bar{B}) = 1 \wedge (B \wedge 1) =$

$= 1 \wedge 1 = 1$

$((x \vee y) \& \bar{x}) \vee ((\overline{x \vee y}) \& \bar{x}) = (x \vee y) \vee (\overline{x \vee y}) =$

$= 1$

$(A \vee \bar{B}) \& (\bar{A} \vee B) \vee \overline{A \& B} = (A \vee \bar{B}) \& (\bar{A} \vee B) \vee \bar{A} \vee \bar{B} =$

$= (\bar{B} \vee B) \& (A \vee B) \& (\bar{B} \vee \bar{B})$

$= (A \vee \bar{B}) \& (\bar{B} \vee B) \vee \bar{A} \vee \bar{A} = (A \vee \bar{B}) \& 1 \vee A =$

$= A \vee B \& 1 = A \vee 1 \& B = 1 \& B = B$

$a \wedge (\bar{a} \vee b \vee c) \vee b \wedge (\overline{a \vee b}) = b \wedge (\bar{a} \vee a \vee c) \vee \bar{a} \wedge$

$\wedge (b \vee b) = b \wedge (1 \vee c) \vee \bar{a} \wedge 1 = b \wedge 1 \vee 1 =$

$= 1 \vee 1 = 1$

$a \wedge (x \to c) \vee c = a \wedge (\bar{x} \vee c) \vee c = a \wedge (c \vee c) \vee \bar{x} =$

$= a \wedge c \vee \bar{x} = a \wedge (c \vee \bar{x})$