Вариант №15

№1

$f = (0010)$, $g = (0100)$

$h(x_1, x_2, x_3) = f(x_3 x_3) \& g_2(x_3, g_1(x_1, x_2))$

1)

x_1	x_2	$f(x_3 x_3)$	$g(x_1, x_2)$
0	0	0	0
0	1	0	1
1	0	1	0
1	1	0	0

x_1	x_2	x_3	F	g_1	g_2	h
0	0	0	0	0	0	0
0	0	1	0	0	0	0
0	1	0	0	1	1	0
0	1	1	0	1	0	0
1	0	0	1	0	0	0
1	0	1	1	0	0	0
1	1	0	0	0	0	0
1	1	1	0	0	0	0

31.05.21.

$h = (0000000000)$

№2

$\varphi = ((x_2 \oplus x_3) | (x_3 | x_1)) | (\bar{x}_3 \oplus (x_3 | x_2))$

$\psi = (x_1 \oplus x_3) | (x_1 \downarrow x_2)$

$\ominus (x_2 \vee x_3) \wedge (x_3 \vee \bar{x}_1) \wedge (\bar{x}_1 \vee \bar{x}_3)) | (\bar{x}_1 \oplus (\bar{x}_2 \vee \bar{x}_3)) =$

$= x_1 \vee x_2 \vee \bar{x}_3$

$(x_1 \oplus x_3) | (x_1 \downarrow x_2) = (x_1 \wedge \bar{x}_3) \vee (x_1 \wedge \bar{x}_1) | (\bar{x}_2 \wedge \bar{x}_1) =$

$= x_2 \vee x_1 \vee \bar{x}_3$

№3

$(x_1 \to x_3) \downarrow (x_2 \to (x_1 x_3)) = (x_3 \vee \bar{x}_1) \downarrow ((x_1 \wedge x_3) \vee \bar{x}_2) =$

$= x_1 \wedge x_2 \wedge \bar{x}_3$

СДНФ $= x_1 x_2 \bar{x}_3$

СКНФ $= (x_1 \vee x_2 \vee x_3) \wedge (x_1 \vee x_2 \vee \bar{x}_3) \wedge (x_1 \vee \bar{x}_2 \vee x_3) \wedge$

$\wedge (x_1 \vee \bar{x}_2 \vee \bar{x}_3) \wedge (\bar{x}_1 \vee x_2 \vee x_3) \wedge (\bar{x}_1 \vee x_2 \vee \bar{x}_3) \wedge$

$\wedge (\bar{x}_1 \vee \bar{x}_2 \vee \bar{x}_3)$

Карно

x_1 \ x_2x_3	00	01
0	0	0
1	0	0

№4

$(x_1 \sim \overline{x_2 \vee x_3}$

x_1	x_2
0	0
0	0
0	1
0	1
0	1
1	0
1	0
1	0
1	1
1	1

F = 0

0 = 0

1 = (

0 =

0 =

1 =

0 =

карта Карно

x_1 \ x_2x_3	00	01	11	10
0	0	0	0	0
1	0	0	0	1

№4

$(x_1 \sim \overline{x_2 \vee x_3}) \vee x_2$

x_1	x_2	x_3	$x_2 x_3$	$\overline{x_2 \vee x_3}$	$\overline{x_2 \vee x_3} \vee x_2$	$x_1 \equiv (\overline{x_2 \vee x_3} \vee x_2)$
0	0	0	0	1	1	0
0	0	1	1	0	0	1
0	1	0	1	0	1	0
0	1	1	1	0	1	0
1	0	0	0	1	1	1
1	0	1	1	0	0	0
1	1	0	1	0	1	1
1	1	1	1	0	1	1

$F = 01001011$

$0 = C_0 = 0$

$1 = C_0 \oplus C_3 = 1$

$0 = C_0 \oplus C_2 = 0$

$0 = C_0 \oplus C_3 \oplus C_2 \oplus C_{23} = 0$

$1 = C_0 \oplus C_1 = 1$

$0 = C_0 \oplus C_3 \oplus C_1 \oplus C_{13} = 0$

$1 = C_0 \oplus C_2 \oplus C_1 \oplus C_{12} = 1$

$1 = C_0 \oplus C_3 \oplus C_2 \oplus C_{23} \oplus C_1 \oplus C_{13} \oplus C_{12} \oplus C_{123} = 1$

$F = x_3 \oplus x_1 x_2 x_3 \oplus x_1 \oplus x_1 x_2$

F	+ x_3	− x_2	− $x_2 x_3$	+ x_1	− $x_1 x_3$	+ $x_1 x_2$	+ $x_1 x_2 x_3$
0							
1	1						
1		0					
0	0		0				
0		0		1			
0	0		1		0		
0		1		0		1	
1	1		0		1		1
1		0		1		1	
0	0		1		1		
0		1		1			
1	1		1				
1		1					
1	1						
1							

$F = x_3 \oplus x_1 \oplus x_1 x_2 \oplus x_1 x_2 x_3$

$\sim$ S

$A = \{1, x \vee y, x(y \sim z)\}$

$A = \{(0,0,1,0), (0,1,0,1,0,1,0,1), (1,1,0,1,0,0,1,0)\}$

	t_0	t_1	L	S	M
f_1	−	+	−	−	−
f_2	+	+	−	−	−
f_3	+	+	−	−	−

t_0:

$f_1 = 0 \neq 1$

$f_2 = 0 \overset{+0}{=} 0$

$f_3 = 1 + 0 + 0 =$

L:

f_1 - кон

f_2 - кон

f_3 - кон

S:

$f_1 =$

$f_2 =$

$f_3 =$

M:

f_1

f_2

f_3

T_0:

$f_1 = 0 \neq 1$ ⊕

$f_2 = 0 \stackrel{+0}{=} 0$ ⊕

$f_3 = 1+0+0 = 0$ ⊕

T_1:

$f_1 = 1 = 1$ ⊕

$f_2 = 1+1 = 1$ ⊕

$f_3 = 1+1+1 = 1$ ⊕

L:

f_1 - контекстных нет

f_2 - контекстных нет

f_3 - контекстных нет

S:

$f_1 = 1$ $\quad f_{1S} = 0 \notin S$

$f_2 = 0111$ $\quad f_{2S} = 1000 \notin S$

$f_3 = 00001001$ $\quad f_{3S} = 11110110 \notin S$

M:

$f_1 \notin M$

f_2: $01 \leq 11 \Rightarrow f_2 \notin M$

f_3: $0000 \leq 1001 \Rightarrow f_3 \notin M$