OSNOVE DIGITALNIH VEZIJ

2. Domača naloga
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Podana je funkcija:

$$f(x_1, x_2, x_3, x_4) = (\bar{x}_1 \vee x_1\bar{x}_2x_3) \rightarrow (\bar{x}_3x_4 \downarrow \bar{x}_2x_1)$$

Funkcijo zapiši v DNO obliki. Določi pravilnostno tabelo, zapiši PDNO v skrajšani in eksplicitni obliki ter pretvori PDNO v PKNO. Zapiši PKNO v skrajšani in eksplicitni obliki.

$(\bar{x}_1 \vee x_1\bar{x}_2x_3) \rightarrow (\bar{x}_3x_4 \downarrow \bar{x}_2x_1) =$
$= \overline{(\bar{x}_1 \vee x_1\overline{x_2}x_3)} \vee \big((\bar{x}_3x_4) \downarrow (\bar{x}_2x_1)\big) =$
$= \big(\overline{\bar{x}_1}(\overline{x_1\bar{x}_2x_3})\big) \vee \big(\overline{(\bar{x}_3x_4)(\bar{x}_2x_1)}\big) =$
$= \big(x_1(\bar{x}_1 \vee x_2 \vee \bar{x}_3)\big) \vee \big((x_3 \vee \bar{x}_4)(x_2 \vee \bar{x}_1)\big) =$
$= (x_1\bar{x}_1 \vee x_1x_2 \vee x_1\bar{x}_3) \vee (x_2x_3 \vee \bar{x}_1x_3 \vee x_2\bar{x}_4 \vee \bar{x}_1\bar{x}_4) =$
$= x_1x_2 \vee x_1\bar{x}_3 \vee x_2x_3 \vee \bar{x}_1x_3 \vee x_2\bar{x}_4 \vee \bar{x}_1\bar{x}_4 =$

x_1	x_2	x_3	x_4	$f(x_1, x_2, x_3, x_4)$	m_i	M_i
0	0	0	0	1	0	15
0	0	0	1	0	1	14
0	0	1	0	1	2	13
0	0	1	1	1	3	12
0	1	0	0	1	4	11
0	1	0	1	0	5	10
0	1	1	0	1	6	9
0	1	1	1	1	7	8
1	0	0	0	1	8	7
1	0	0	1	1	9	6
1	0	1	0	0	10	5
1	0	1	1	0	11	4
1	1	0	0	1	12	3
1	1	0	1	1	13	2
1	1	1	0	1	14	1
1	1	1	1	1	15	0

DNO - $f(x_1, x_2, x_3, x_4) = x_1x_2 \vee x_1\bar{x}_3 \vee x_2x_3 \vee \bar{x}_1x_3 \vee x_2\bar{x}_4 \vee \bar{x}_1\bar{x}_4$

PDNO (eksplicitna oblika) - $f^4(x_1, x_2, x_3, x_4) = \bar{x}_1\bar{x}_2\bar{x}_3\bar{x}_4 \vee \bar{x}_1\bar{x}_2x_3\bar{x}_4 \vee \bar{x}_1\bar{x}_2x_3x_4 \vee \bar{x}_1x_2\bar{x}_3\bar{x}_4 \vee \bar{x}_1x_2x_3\bar{x}_4 \vee \bar{x}_1x_2x_3x_4 \vee x_1\bar{x}_2\bar{x}_3\bar{x}_4 \vee x_1\bar{x}_2\bar{x}_3x_4 \vee x_1x_2\bar{x}_3\bar{x}_4 \vee x_1x_2\bar{x}_3x_4 \vee x_1x_2x_3\bar{x}_4 \vee x_1x_2x_3x_4$

PDNO (skrajšana oblika) - $f^4(x_1, x_2, x_3, x_4) = \vee^4 (0, 2, 3, 4, 6, 7, 8, 9, 12, 13, 14, 15)$

PKNO (skrajšana oblika) - $f^4(x_1, x_2, x_3, x_4) = \&^4(14, 10, 5, 4)$

PKNO (eksplicitna oblika) - $f^4(x_1, x_2, x_3, x_4) = (x_1 \vee x_2 \vee x_3 \vee \bar{x}_4)(x_1 \vee \bar{x}_2 \vee x_3 \vee \bar{x}_4)(\bar{x}_1 \vee x_2 \vee \bar{x}_3 \vee x_4)(\bar{x}_1 \vee x_2 \vee \bar{x}_3 \vee \bar{x}_4)$