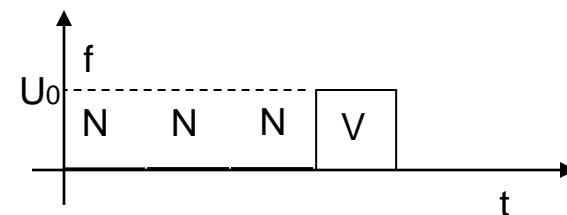
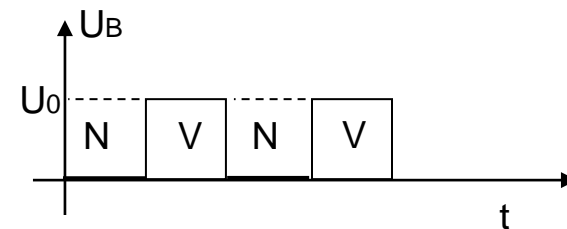
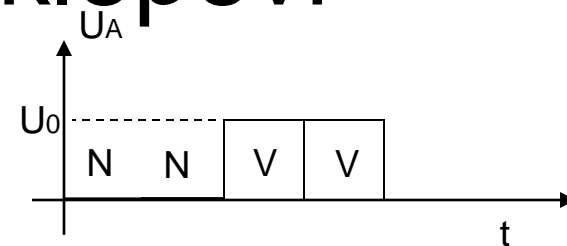
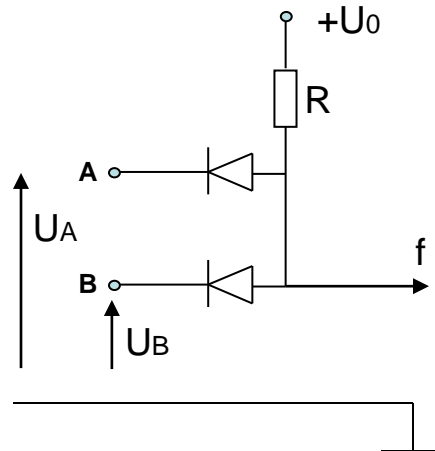
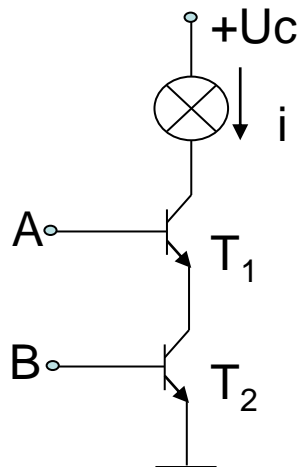


Logičke funkcije i logička kola

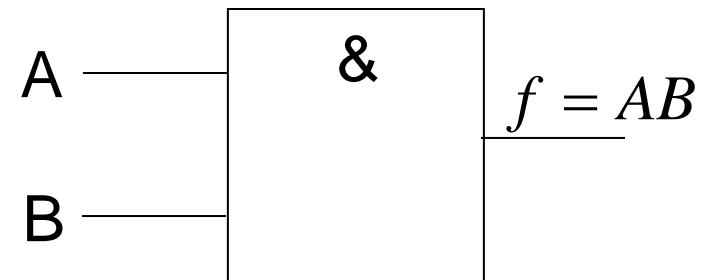
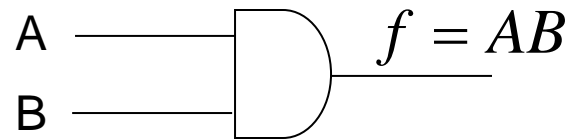
Logička I funkcija - sklopovi



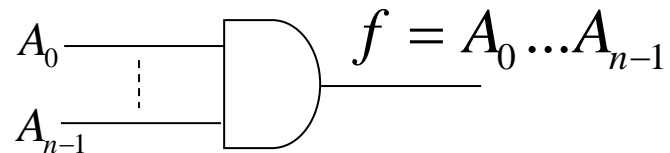
<i>A</i>	<i>B</i>	<i>f</i>
0	0	0
0	1	0
1	0	0
1	1	1

<i>A</i>	<i>B</i>	<i>f</i>
<i>N</i>	<i>N</i>	<i>N</i>
<i>N</i>	<i>V</i>	<i>N</i>
<i>V</i>	<i>N</i>	<i>N</i>
<i>V</i>	<i>V</i>	<i>V</i>

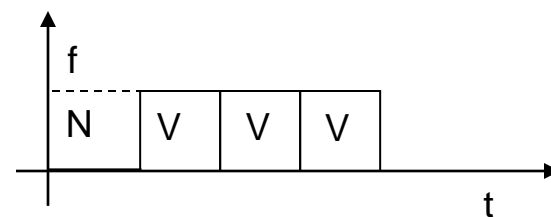
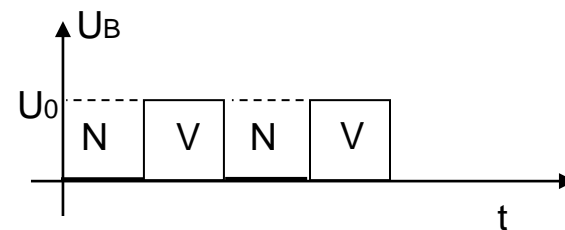
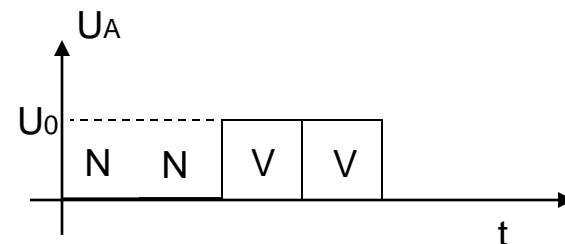
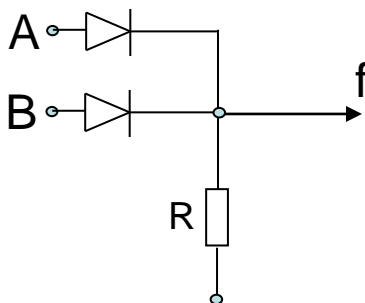
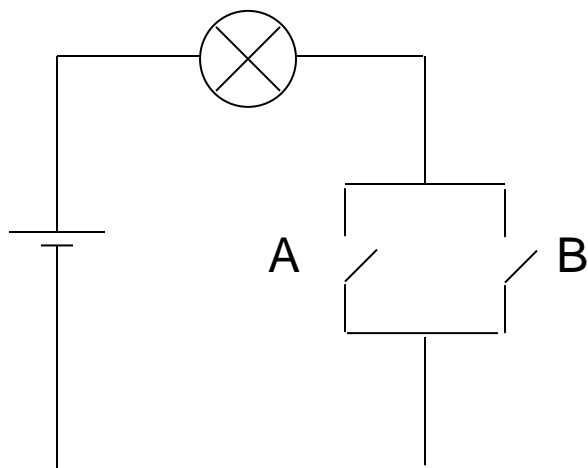
Logička I funkcija - simboli



IEC standard



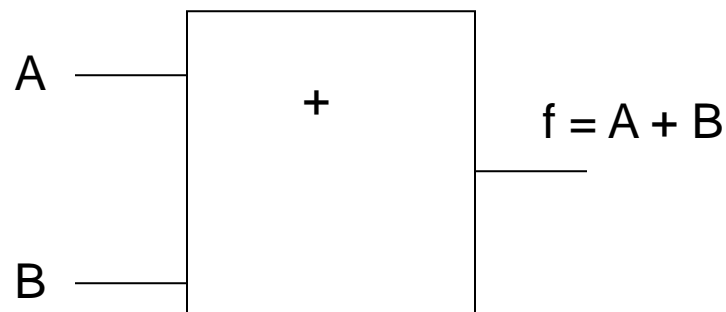
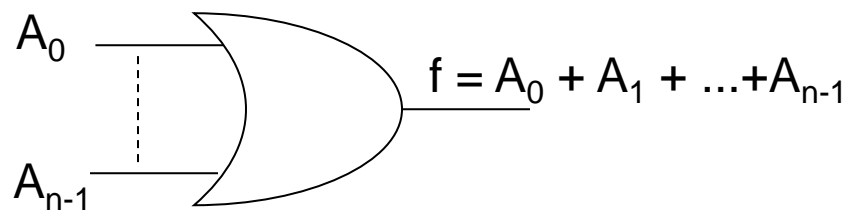
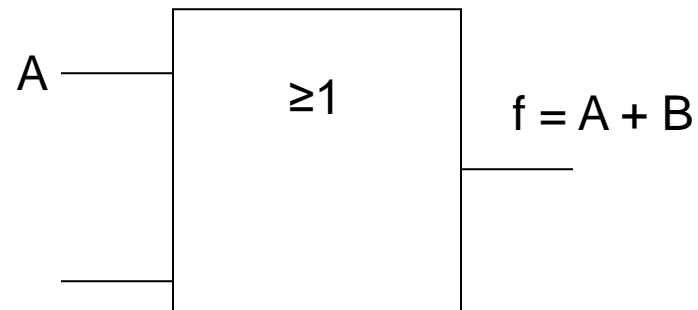
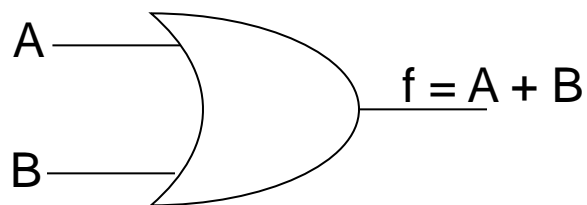
Logička ILI funkcija - sklopovi



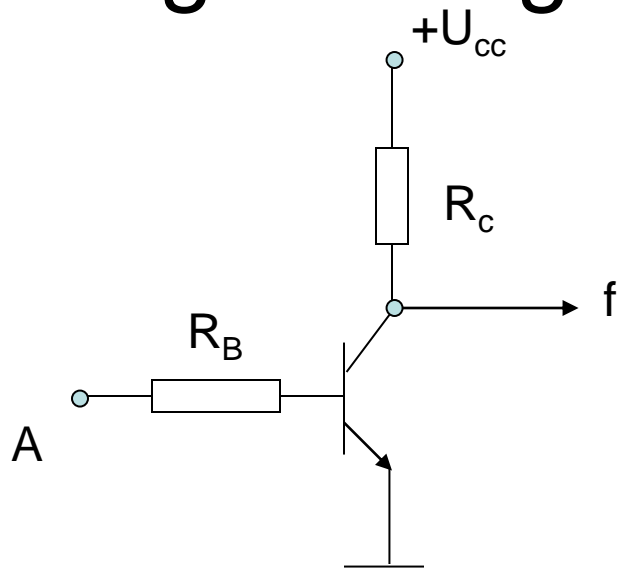
<i>A</i>	<i>B</i>	<i>f</i>
0	0	0
0	1	1
1	0	1
1	1	1

<i>A</i>	<i>B</i>	<i>f</i>
<i>N</i>	<i>N</i>	<i>N</i>
<i>N</i>	<i>V</i>	<i>V</i>
<i>V</i>	<i>N</i>	<i>V</i>
<i>V</i>	<i>V</i>	<i>V</i>

Logička ILI funkcija - simboli

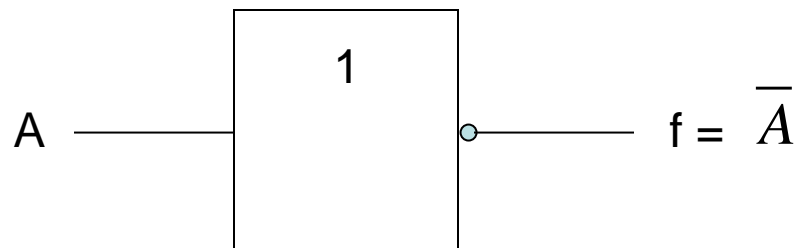
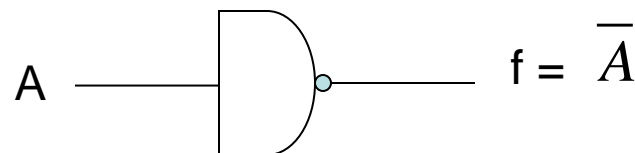
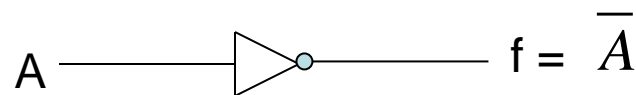
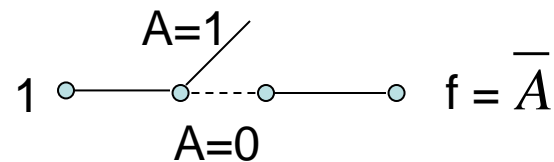


Logička negacija – sklopovi i simboli



A	f
N	V
V	N

A	f
0	1
1	0



Broj funkcija od n varijabli

$$n \rightarrow 2^{2^n}$$

n	2^{2^n}
1	4
2	16
3	256
4	65536
5	4294967296

Funkcije jedne varijable

A	f_0	f_1	f_2	f_3
0	0	0	1	1
1	0	1	0	1

$$f_0 = 0$$

$$f_1 = A$$

$$f_2 = \overline{A}$$

$$f_3 = 1$$

Funkcije dviju varijabli

[illegible]

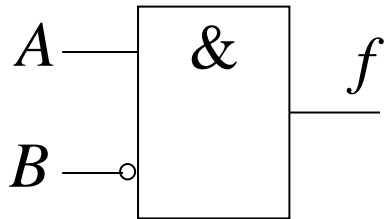
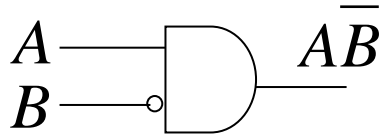
Funkcije dviju varijabli

<i>Funkcija</i>	<i>Simbol operatora</i>	<i>Ime</i>	<i>Primjedba</i>
$f_0 = 0$		<i>nula</i>	<i>binarna konstanta</i>
$f_1 = AB$	$A \sqcap B$	<i>I – funkcija</i>	
$f_2 = A\bar{B}$	$A \mid B$	<i>inhibicija</i>	<i>B inhibira A</i>
$f_3 = A$		<i>identitet</i>	<i>prijenos nepromijenjene vrijednosti</i>
$f_4 = \bar{A}B$	$B \mid A$	<i>inhibicija</i>	<i>A inhibira B</i>
$f_5 = B$		<i>identitet</i>	<i>prijenos nepromijenjene vrijednosti</i>
$f_6 = \bar{A}B + A\bar{B}$	$A \oplus B$	<i>isključivo ILI</i>	<i>ili A, ili B, ne oboje</i>
$f_7 = A + B$	$A + B$	<i>ILI funkcija</i>	<i>ili A, ili B, ili oboje</i>
$f_8 = \overline{A + B}$	$A \downarrow B$	<i>NILI</i>	<i>NE– ILI</i>
$f_9 = \bar{A}\bar{B} + AB$	$A \sqcap B$	<i>ekvivalencija</i>	
$f_{10} = \bar{B}$	\bar{B}	<i>komplement</i>	<i>NE– B</i>
$f_{11} = A + \bar{B}$	$B \supset A$	<i>implikacija</i>	<i>ako NE B onda A</i>
$f_{12} = \bar{A}$	\bar{A}	<i>komplement</i>	<i>NE– A</i>
$f_{13} = \bar{A} + B$	$A \supset B$	<i>implikacija</i>	<i>ako NE A onda B</i>
$f_{14} = \overline{AB}$	$A \uparrow B$	<i>NI</i>	<i>NE – I</i>
$f_{15} = 1$		<i>jedan</i>	<i>binarna konstanta</i>

Funkcije Inhibicija i Implikacija

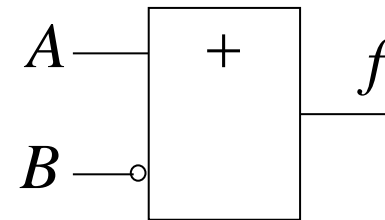
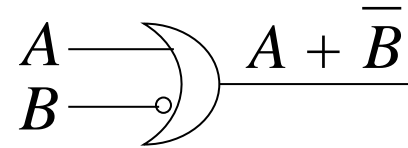
Inhibicija

$$f = A\bar{B}$$



Implikacija

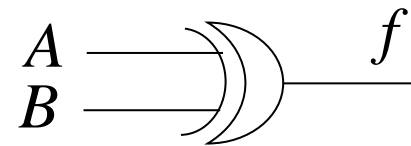
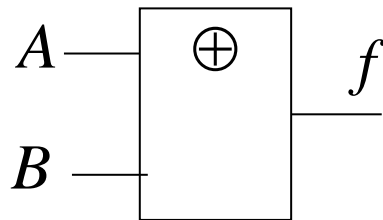
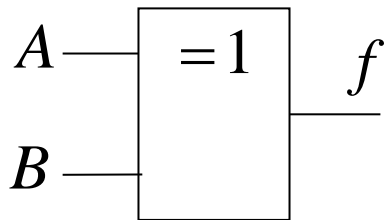
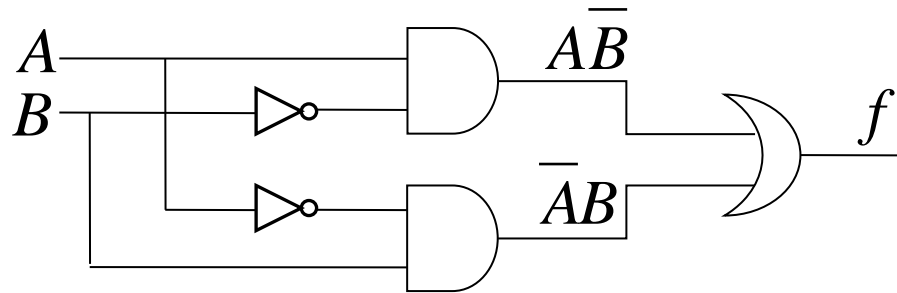
$$f = A + \bar{B}$$



Funkcija EXOR

EXOR

$$f = A\bar{B} + \bar{A}B$$



Funkcije Ekvivalencija (EXNOR) i EXOR

ekvivalencija

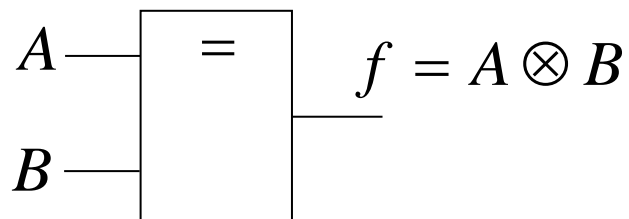
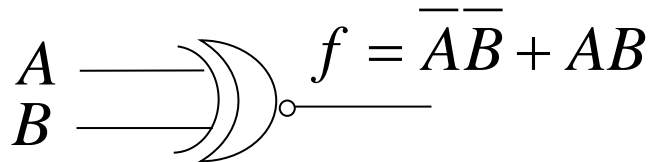
EXNOR

A	B	$A \otimes B = \overline{A \oplus B}$
0	0	1
0	1	0
1	0	0
1	1	1

EXOR

$$f = A\bar{B} + \bar{A}B$$

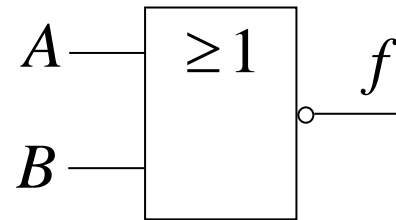
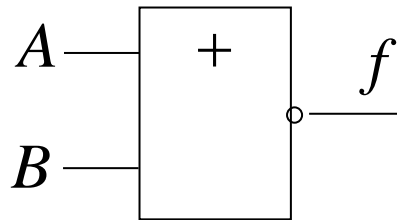
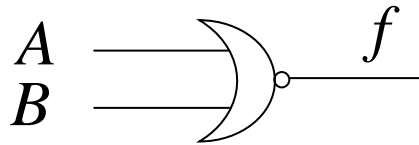
A	B	$A \oplus B$
0	0	0
0	1	1
1	0	1
1	1	0



NILI funkcija

$$f = \overline{A + B}$$

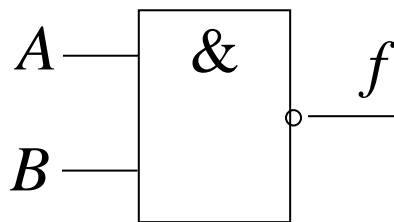
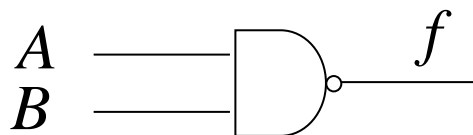
A	B	f
0	0	1
0	1	0
1	0	0
1	1	0



NI funkcija

$$f = \overline{AB}$$

A	B	f
0	0	1
0	1	1
1	0	1
1	1	0



Osnovne funkcije

$I + NE$

$ILI + NE$

$EXOR + I$

$EXNOR + I$

NI

$NILI$

Inhibicija

Implikacija

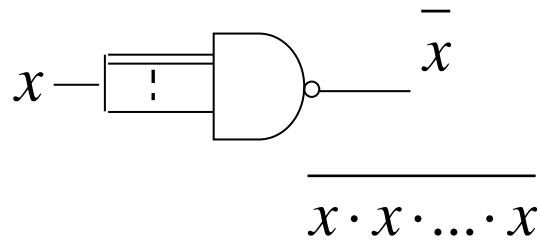
Funkcije NI i NILI od više varijabli

$$f(x_1, x_2, \dots, x_n) = \overline{x_1 \cdot x_2 \cdot \dots \cdot x_n}$$

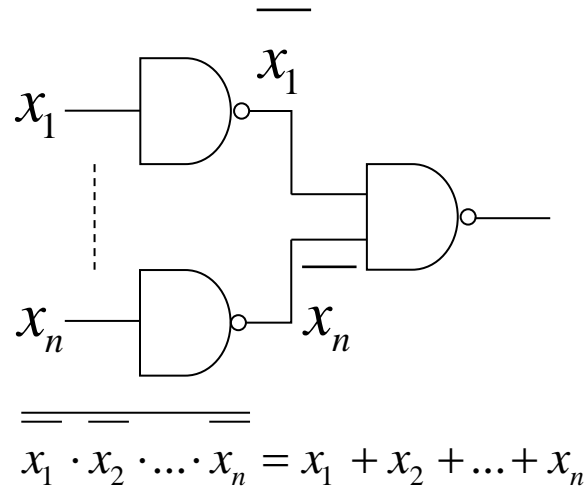
$$f(x_1, x_2, \dots, x_n) = \overline{x_1 + x_2 + \dots + x_n}$$

Osnovne funkcije I, ILI i NE pomoću NI ili NILI funkcija

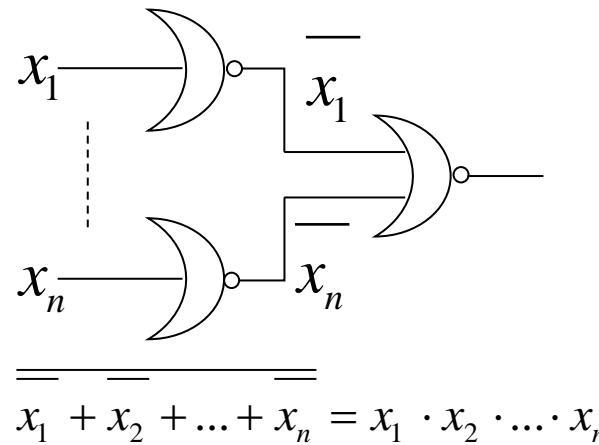
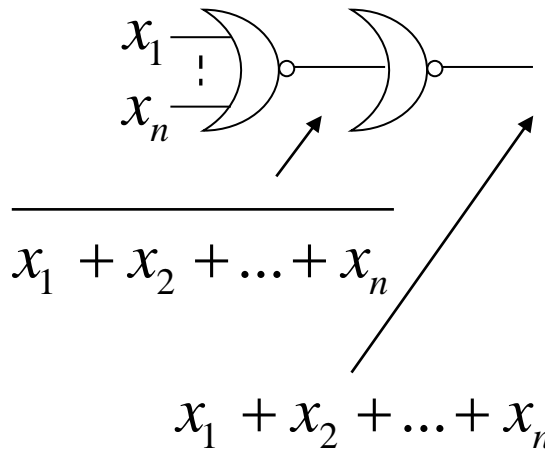
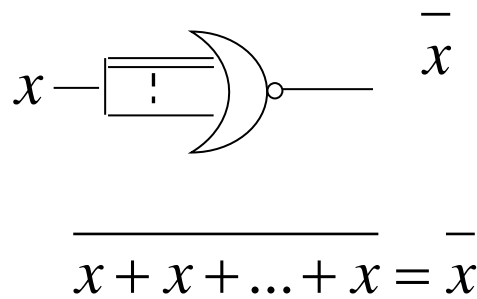
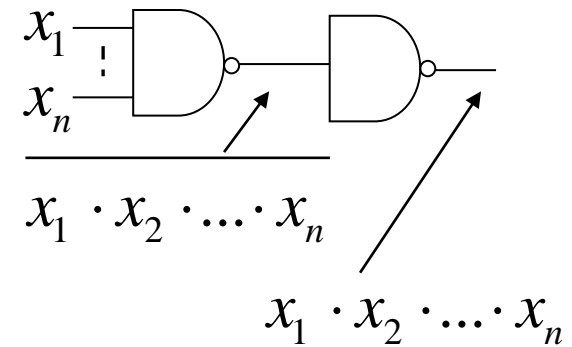
NE



ILI



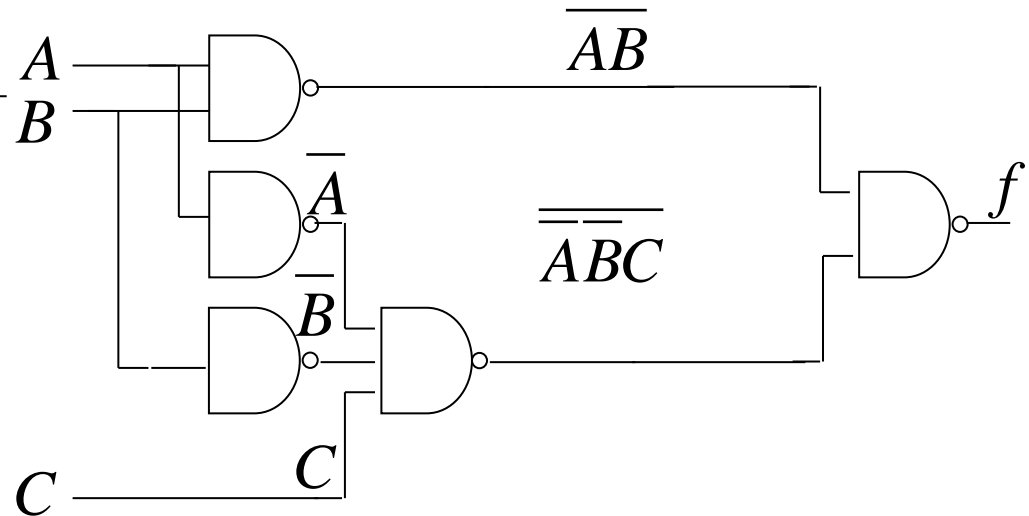
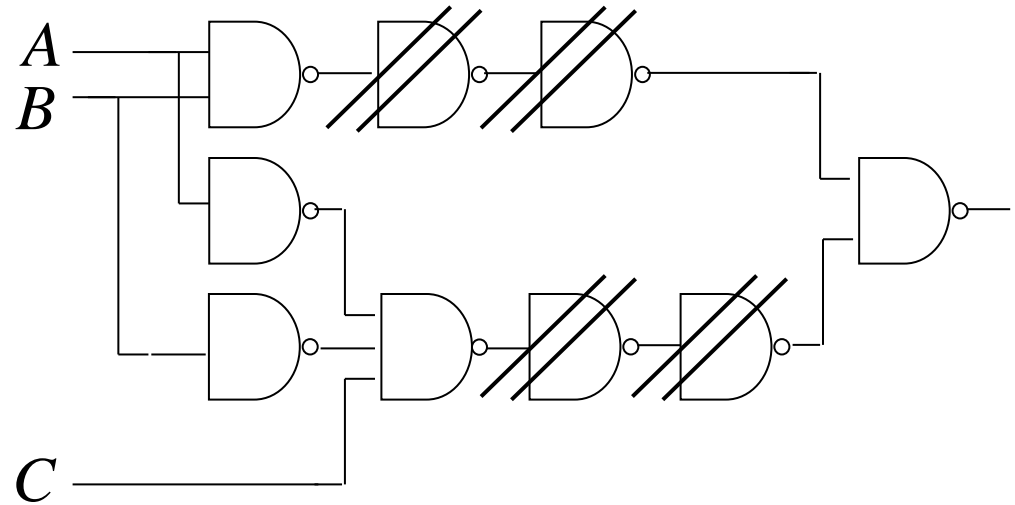
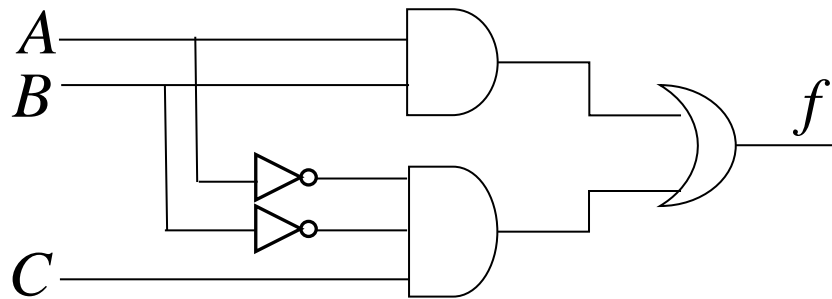
I



Pretvaranje funkcije u NI oblik

$$f = AB + \overline{\overline{A}}\overline{B}C$$

a) metoda supstitucije



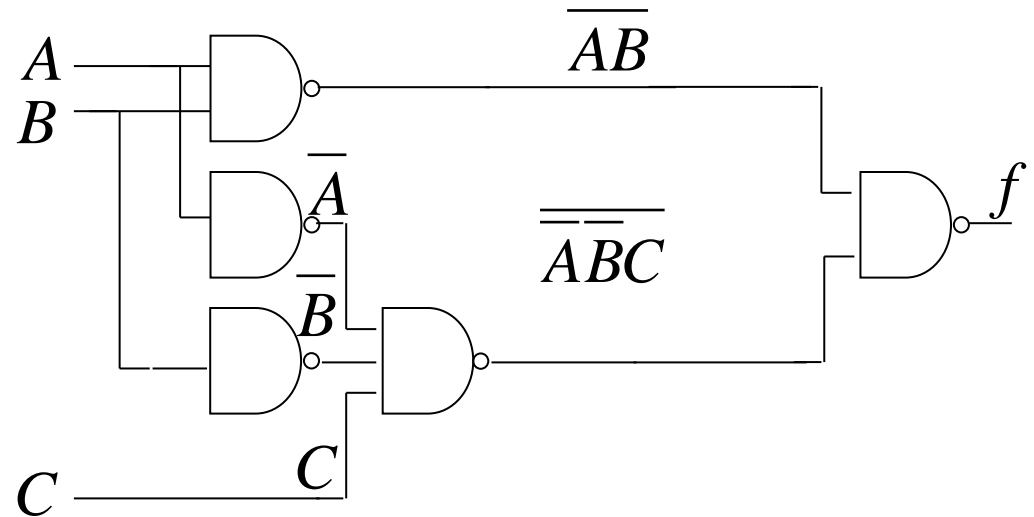
Pretvaranje funkcije u NI oblik

b) algebarska metoda

$$f = AB + \overline{\overline{A}}\overline{\overline{B}}\overline{\overline{C}}$$

$$f = \overline{\overline{AB}} + \overline{\overline{A}}\overline{\overline{B}}\overline{\overline{C}}$$

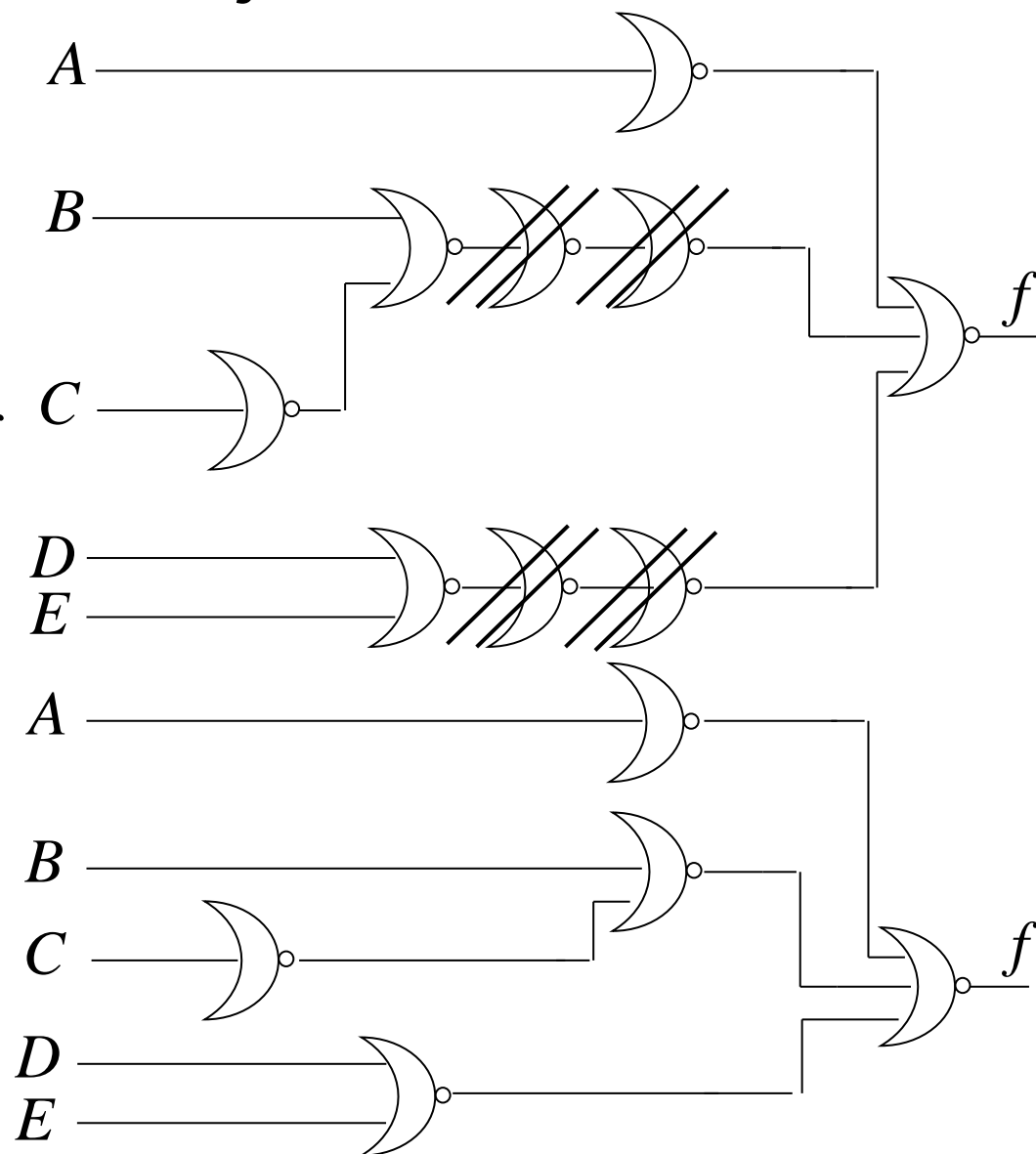
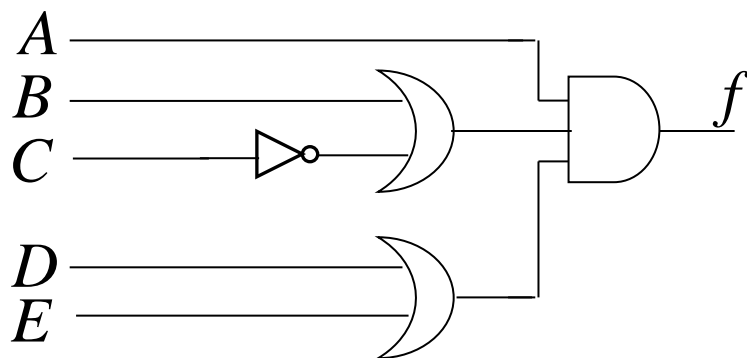
$$= \overline{\overline{AB}} \cdot \overline{\overline{A}}\overline{\overline{B}}\overline{\overline{C}}$$



Pretvaranje funkcije u NLI oblik

$$f = A(B + \overline{C})(D + E)$$

a) metoda supstitucije



Pretvaranje funkcije u NII oblik

b) algebarska metoda

$$f = A(B + \bar{C})(D + E)$$

$$f = \overline{\overline{A(B + \bar{C})(D + E)}}$$

$$f = \overline{\bar{A} + \overline{(B + \bar{C})} + \overline{(D + E)}}$$

