

Задание по теме «Минимизация логических схем и выражений»

Задача 1.

Для заданного логического выражения (таблица 1) нарисовать логическую схему. С помощью карты Карно получить минимальное логическое выражение и нарисовать соответствующую минимальную логическую схему.

Задача 2.

Для заданной логической схемы (рис. 1 - 45, номер варианта равен номеру рисунка) написать логическое выражение и заполнить таблицу истинности. С помощью карты Карно получить минимальное логическое выражение и нарисовать соответствующую минимальную логическую схему.

Таблица 1

№	Логическое выражение
1	$y = \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abc} + \overline{abc} + \overline{abc} + \overline{abc} + \overline{abd}$.
2	$y = \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{acd} + \overline{abcd} + \overline{acd}$.
3	$y = \overline{bcd} + \overline{abc} + \overline{abd} + \overline{abd} + \overline{ad} + \overline{abcd} + \overline{abcd} + \overline{abd} + \overline{abc}$.
4	$y = \overline{abcd} + \overline{abc} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abc} + \overline{acd} + \overline{ab}$.
5	$y = \overline{abc} + \overline{abcd} + \overline{abcd} + \overline{abc} + \overline{bcd} + \overline{ab} + \overline{abcd}$.
6	$y = \overline{abcd} + \overline{abc} + \overline{abcd} + \overline{abcd} + \overline{ab} + \overline{bcd} + \overline{bcd} + \overline{ab}$.
7	$y = \overline{acd} + \overline{abcd} + \overline{abc} + \overline{acd} + \overline{abc} + \overline{bcd} + \overline{acd} + \overline{ad}$.
8	$y = \overline{abcd} + \overline{abcd} + \overline{ad} + \overline{bcd} + \overline{abc} + \overline{abd} + \overline{abc} + \overline{ab} + \overline{bd}$.
9	$y = \overline{abcd} + \overline{abc} + \overline{abc} + \overline{abcd} + \overline{acd} + \overline{abc} + \overline{abcd} + \overline{ab} + \overline{abc} + \overline{abcd}$.
10	$y = \overline{ab} + \overline{ab} + \overline{cd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd}$.
11	$y = \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abc} + \overline{abc} + \overline{abc} + \overline{abc} + \overline{bd}$.
12	$y = \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{acd} + \overline{abcd} + \overline{bcd}$.
13	$y = \overline{abcd} + \overline{abc} + \overline{abd} + \overline{abd} + \overline{ad} + \overline{abcd} + \overline{abcd} + \overline{abd} + \overline{abc}$.
14	$y = \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abc} + \overline{acd} + \overline{ab}$.
15	$y = \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abc} + \overline{bcd} + \overline{ab} + \overline{abcd}$.
16	$y = \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{ab} + \overline{bcd} + \overline{bcd} + \overline{ab}$.
17	$y = \overline{abcd} + \overline{abcd} + \overline{abc} + \overline{acd} + \overline{abc} + \overline{bcd} + \overline{acd} + \overline{ad}$.
18	$y = \overline{abcd} + \overline{abcd} + \overline{ad} + \overline{bcd} + \overline{abc} + \overline{abc} + \overline{ab} + \overline{bd}$.
19	$y = \overline{abc} + \overline{abc} + \overline{abcd} + \overline{acd} + \overline{abc} + \overline{abcd} + \overline{ab}$.
20	$y = \overline{ab} + \overline{ab} + \overline{cd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd}$.
21	$y = \overline{ab} + \overline{acd} + \overline{abcd} + \overline{abc} + \overline{abc} + \overline{abc} + \overline{abc} + \overline{bd}$.
22	$y = \overline{bcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{acd} + \overline{abcd} + \overline{bcd}$.
23	$y = \overline{abcd} + \overline{abc} + \overline{abd} + \overline{abd} + \overline{ad} + \overline{abcd} + \overline{abcd} + \overline{abd}$.
24	$y = \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abc} + \overline{acd} + \overline{ab}$.
25	$y = \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{abc} + \overline{bcd} + \overline{ab} + \overline{abc}$.
26	$y = \overline{abcd} + \overline{abcd} + \overline{abcd} + \overline{ab} + \overline{bcd} + \overline{bcd} + \overline{abd}$.

27	$y = \overline{a}bcd + \overline{a}\overline{b}\overline{c}d + \overline{a}bc + acd + abc + \overline{b}cd + ac\overline{d} + \overline{a}d .$
28	$y = \overline{a}bc\overline{d} + \overline{a}d + \overline{b}cd + \overline{a}bc + \overline{a}bd + abc + \overline{a}b + b\overline{d} .$
29	$y = abcd + \overline{a}bc + \overline{a}bc + \overline{a}bcd + acd + \overline{a}bc + \overline{a}bcd + \overline{a}b + abc .$
30	$y = \overline{a}b + cd + \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}bcd + \overline{a}bcd + abcd .$
31	$y = \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}bc + \overline{a}bc + \overline{a}bc + abc + bd .$
32	$y = \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}bcd + \overline{a}bcd + \overline{a}bcd + \overline{a}bcd + acd + abc .$
33	$y = \overline{a}bc\overline{d} + \overline{a}bc + \overline{a}bd + \overline{a}bd + \overline{a}d + \overline{a}bcd + \overline{a}bcd + \overline{a}bd .$
34	$y = ab + \overline{b}d + \overline{a}bcd + \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}bcd + abcd + \overline{a}bc + acd + .$
35	$y = \overline{a}bcd + \overline{a}bcd + \overline{a}bcd + \overline{a}bc + bcd + \overline{a}b + abcd + ab .$
36	$y = \overline{a}bcd + \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}b + \overline{b}cd + \overline{b}cd + bc .$
37	$y = ad + \overline{a}bcd + \overline{a}bcd + \overline{a}bc + acd + \overline{a}bc + \overline{b}cd + ac\overline{d} + acd .$
38	$y = bcd + \overline{a}d + \overline{b}cd + \overline{a}bc + \overline{a}bd + \overline{a}bc + \overline{a}b + b\overline{d} .$
39	$y = \overline{a}bc + \overline{a}bc + \overline{a}bcd + acd + \overline{a}bc + \overline{a}bcd + \overline{a}b + abc .$
40	$y = \overline{a}b + \overline{a}b + cd + \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}bc\overline{d} + \overline{a}bcd + abcd .$
41	$y = \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}bcd + \overline{a}bc + \overline{a}bc + abc + \overline{a}bc + bd .$
42	$y = \overline{a}bcd + \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}bcd + \overline{a}cd .$
43	$y = abcd + \overline{a}bc + \overline{a}bd + \overline{a}bd + \overline{a}d + \overline{a}bcd + \overline{a}bcd + abc .$
44	$y = \overline{a}bcd + \overline{a}bcd + \overline{a}bc\overline{d} + \overline{a}bcd + abcd + \overline{a}bc + \overline{a}cd + ab .$
45	$y = \overline{b}cd + \overline{a}bc\overline{d} + \overline{a}bcd + \overline{a}bc + bcd + \overline{a}b + abcd .$

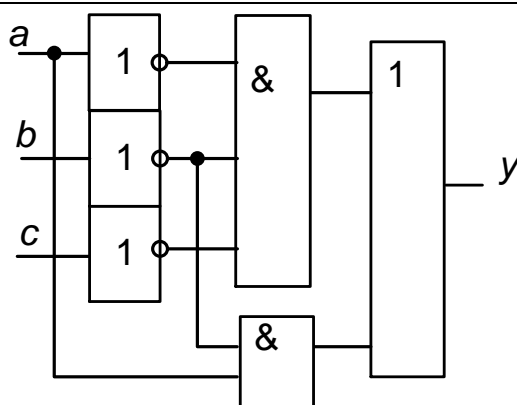
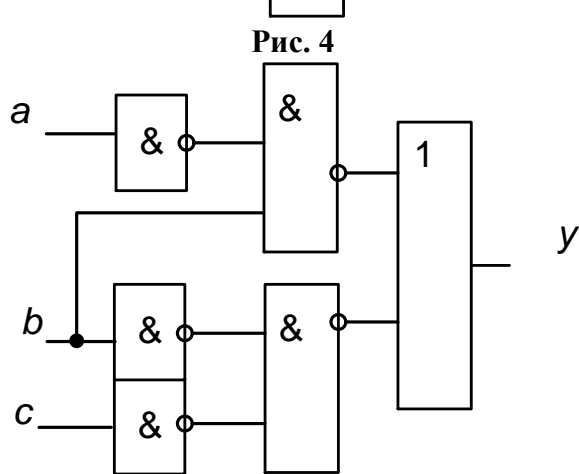
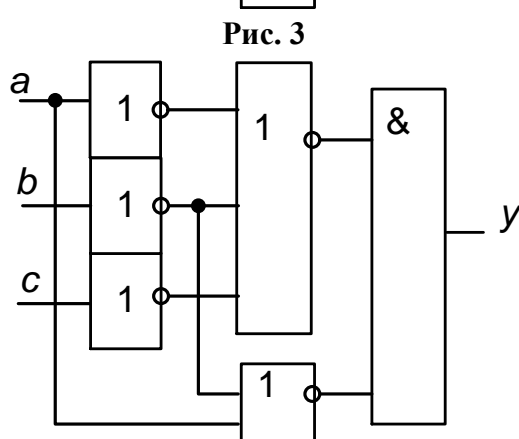
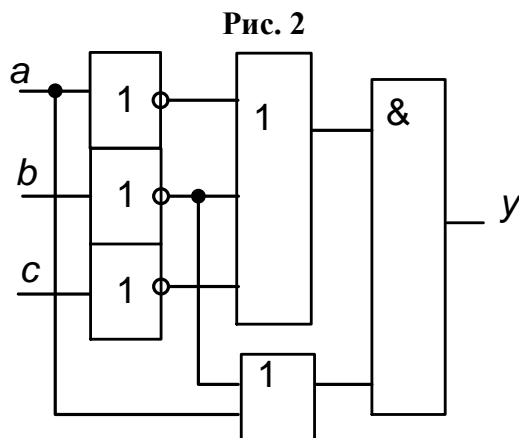
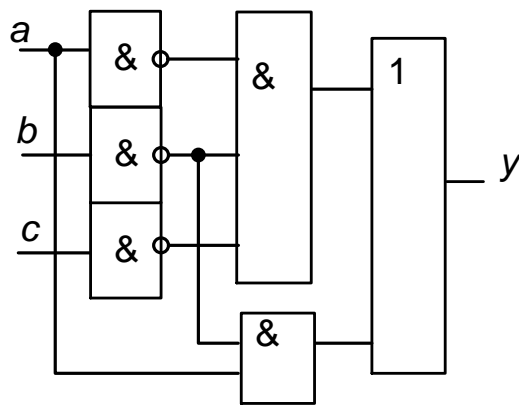


Рис. 1



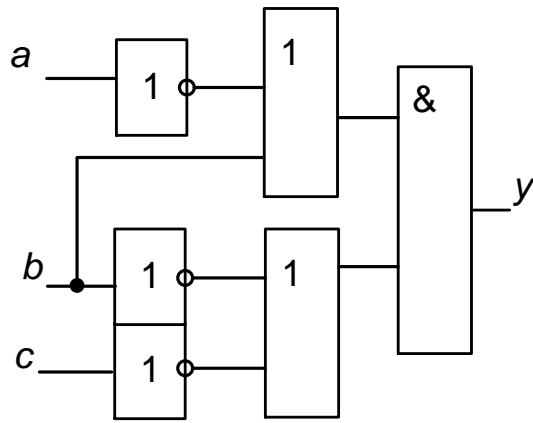


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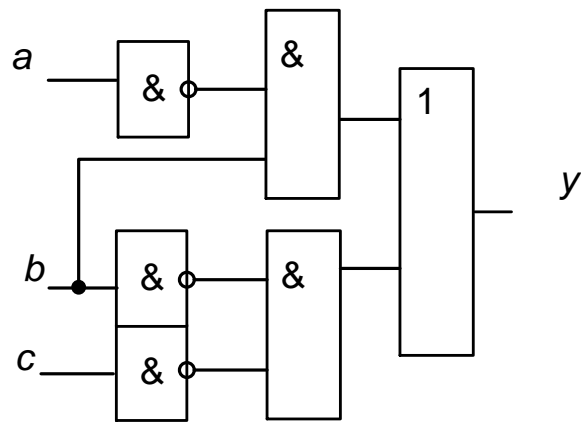


Рис. 7

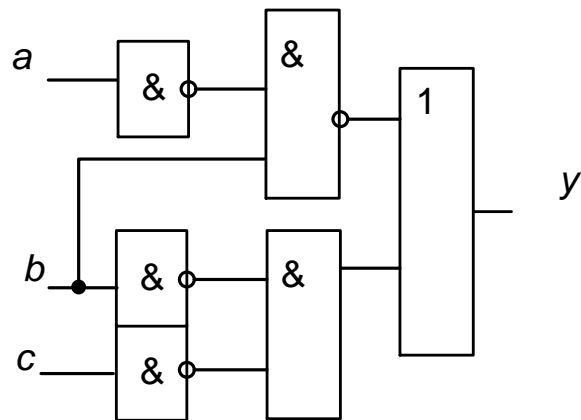


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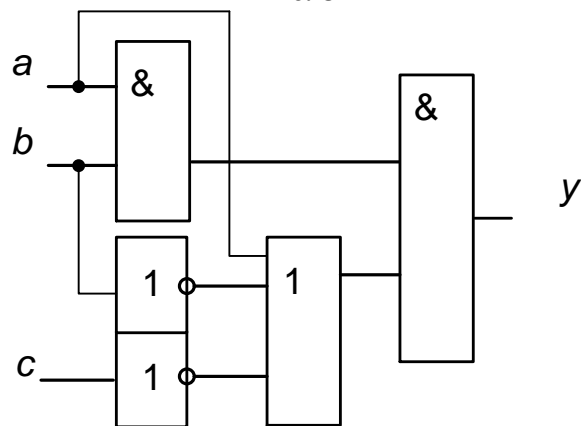
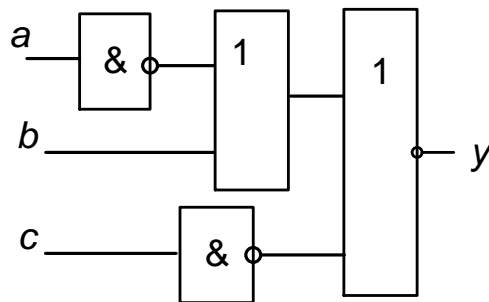
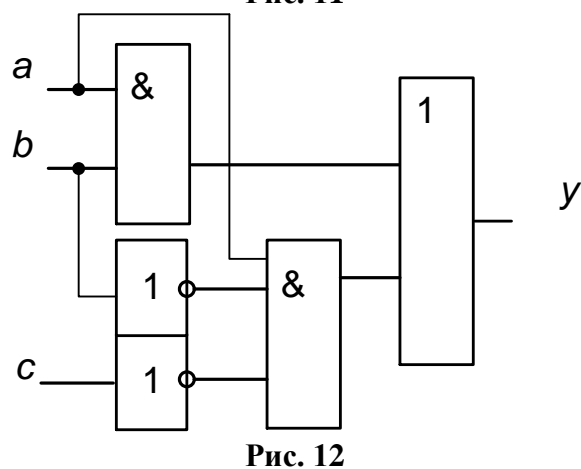
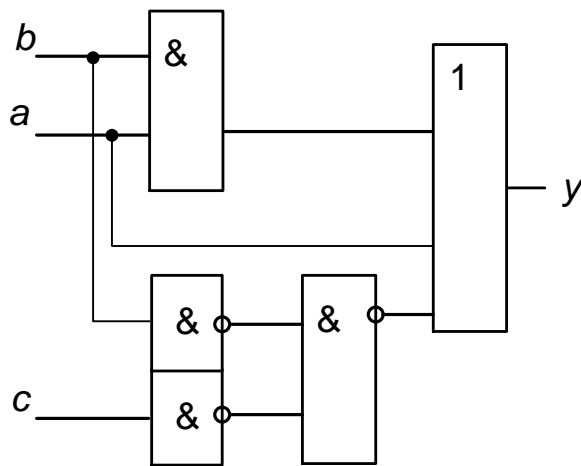
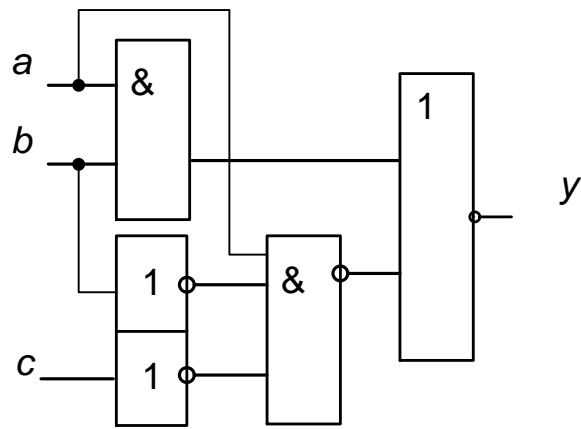


Рис. 9



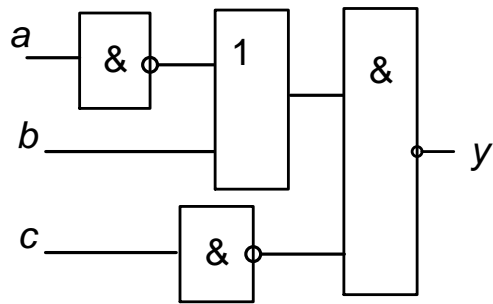


Рис. 14

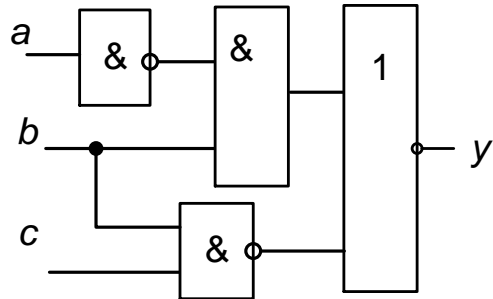


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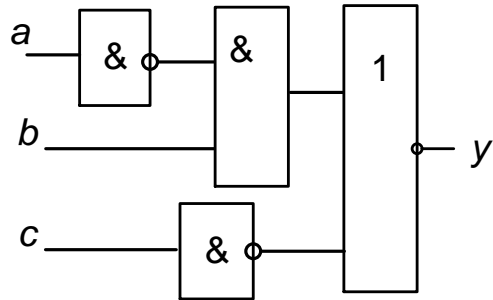


Рис. 16

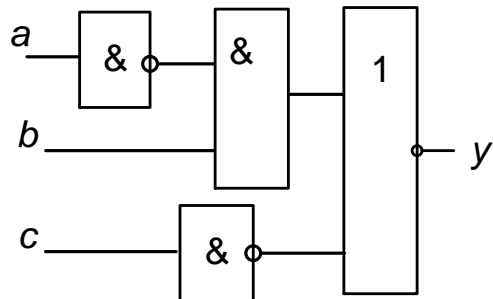


Рис. 17

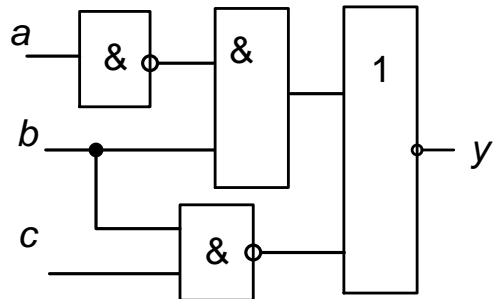


Рис. 18

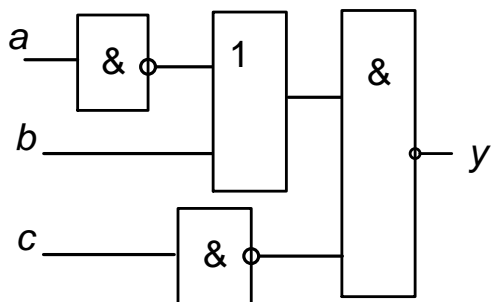


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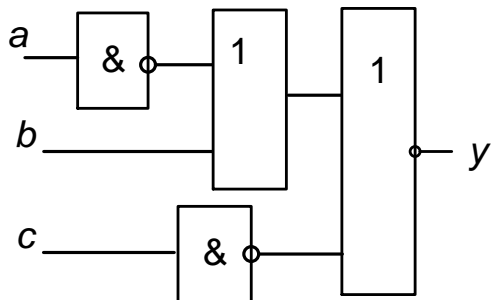


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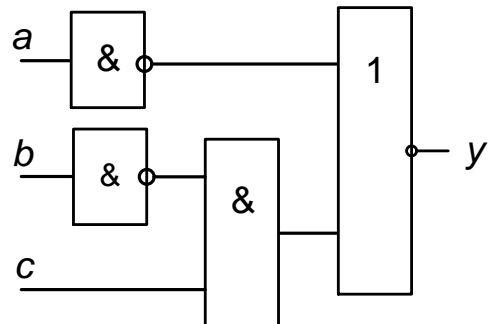


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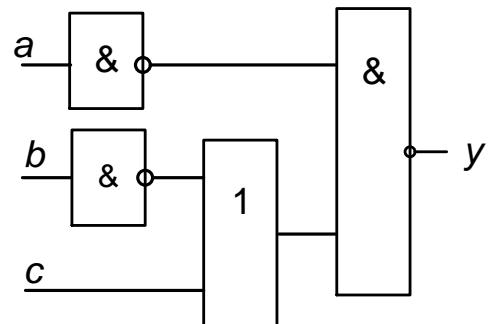


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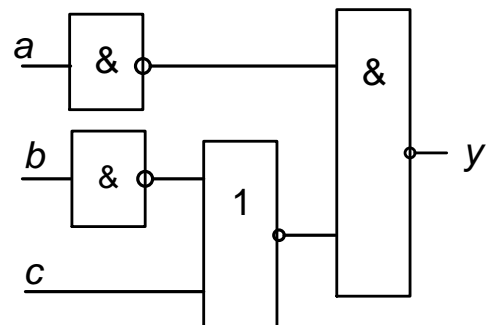


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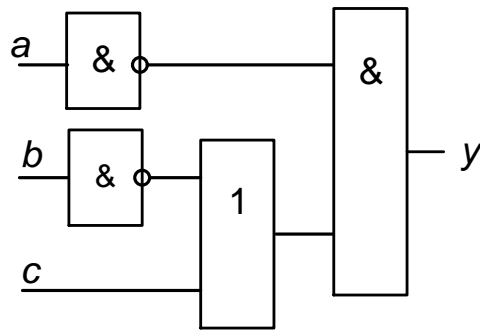


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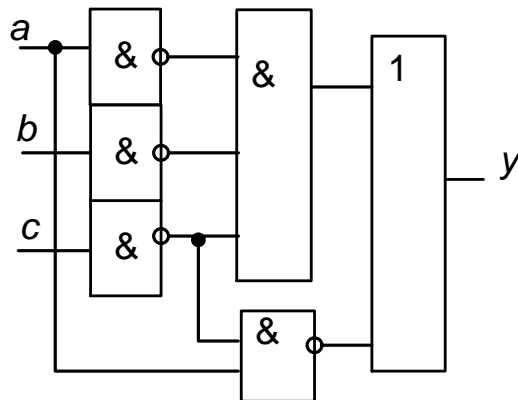


Рис. 25

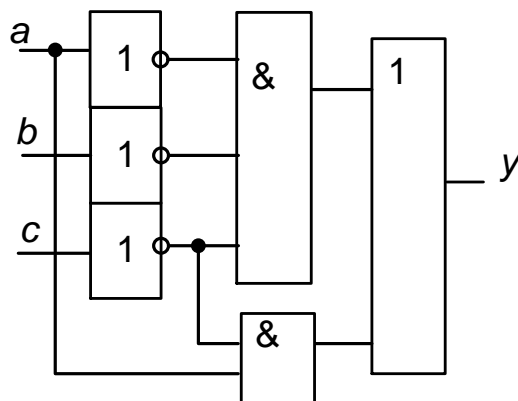


Рис. 26

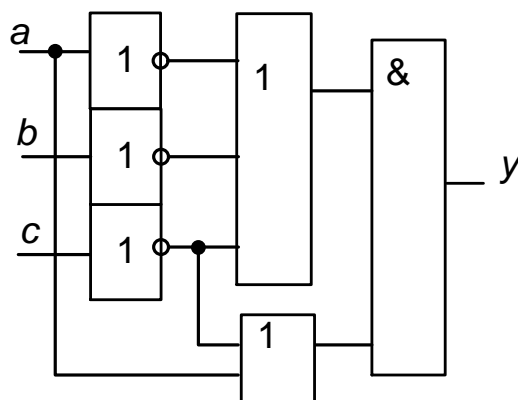


Рис. 27

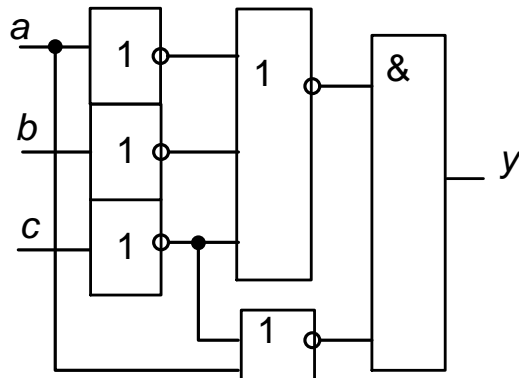


Рис. 28

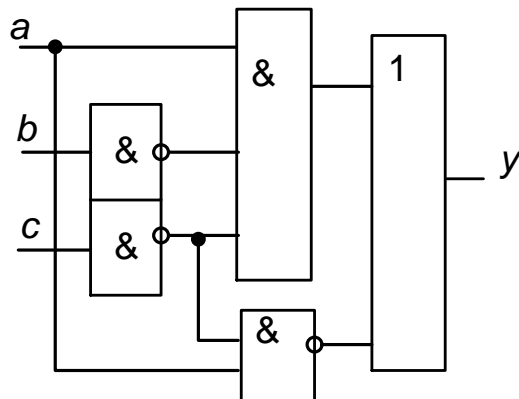


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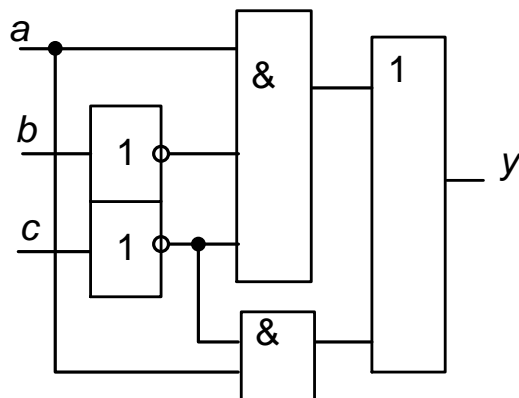


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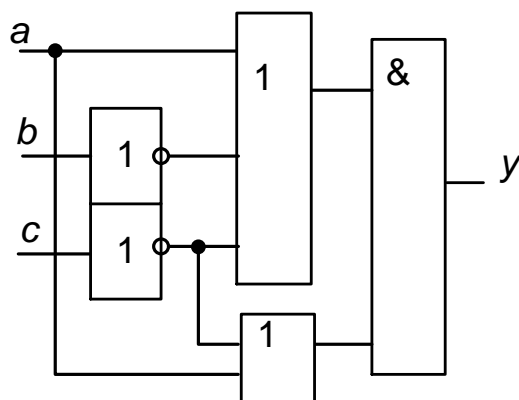


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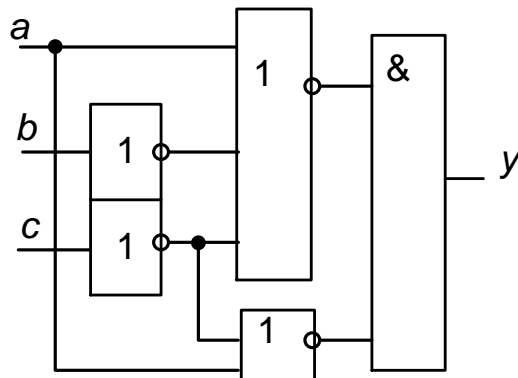


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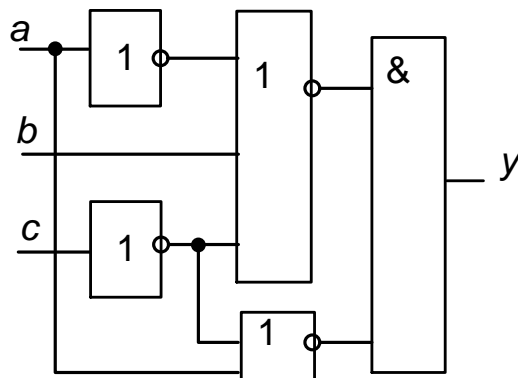


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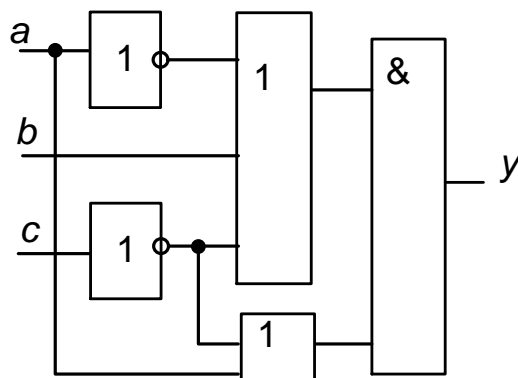


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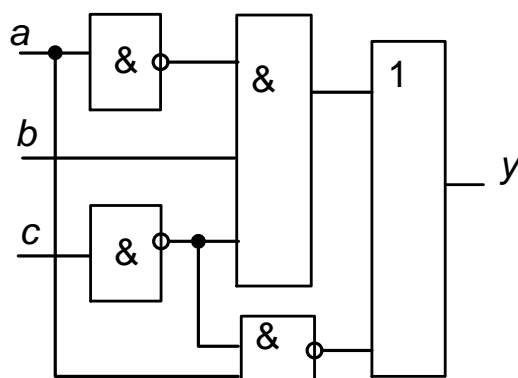


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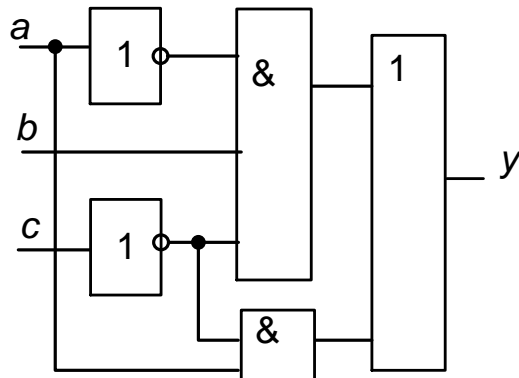


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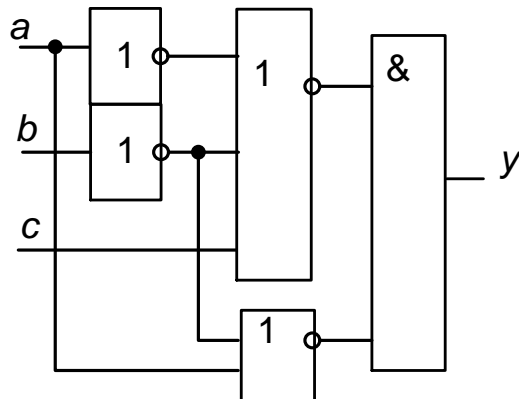


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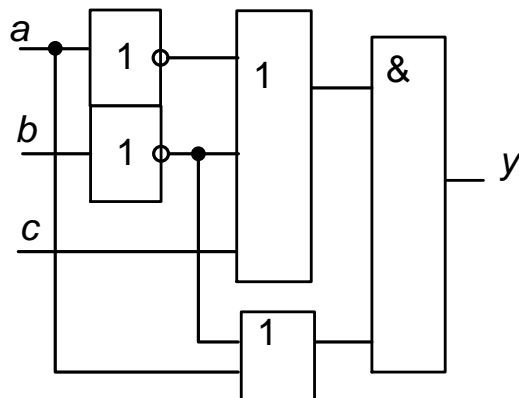


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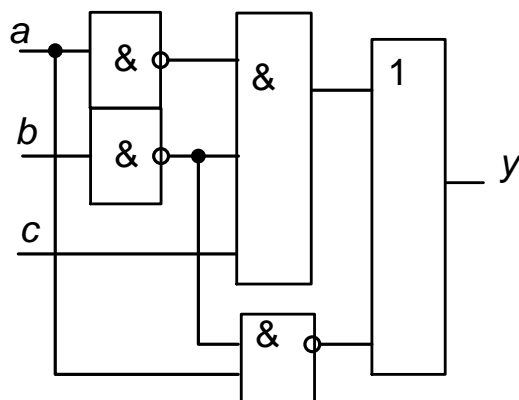
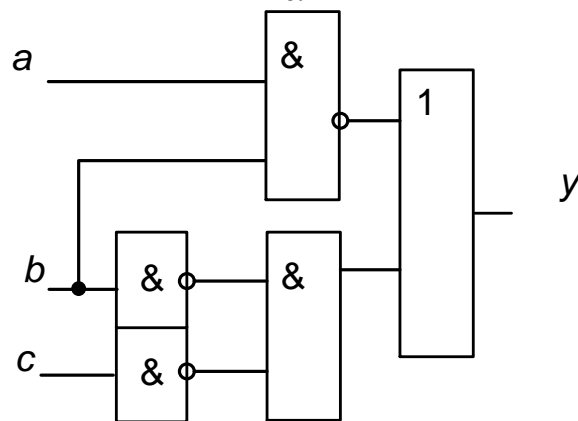
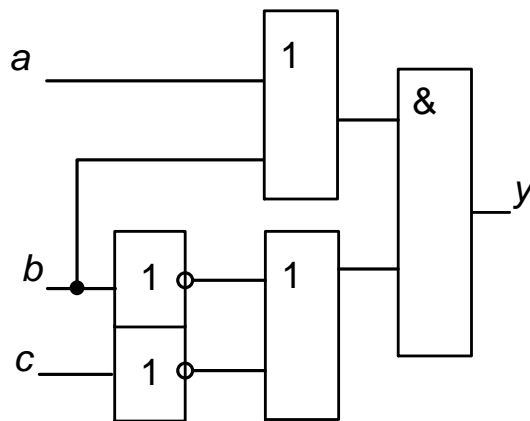
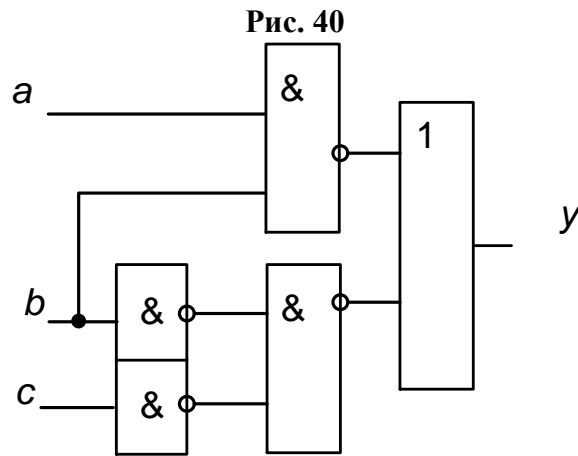
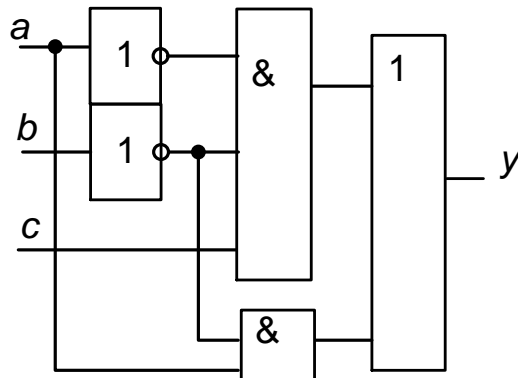


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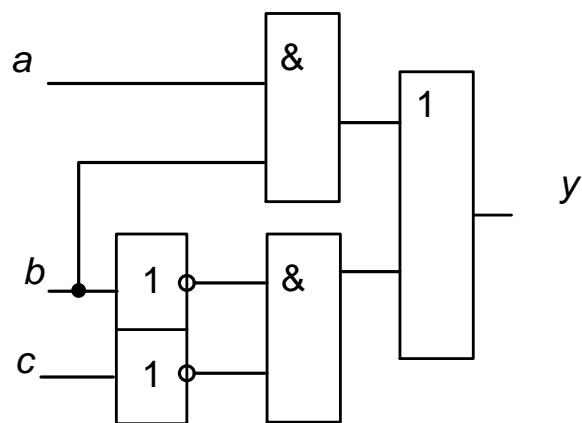


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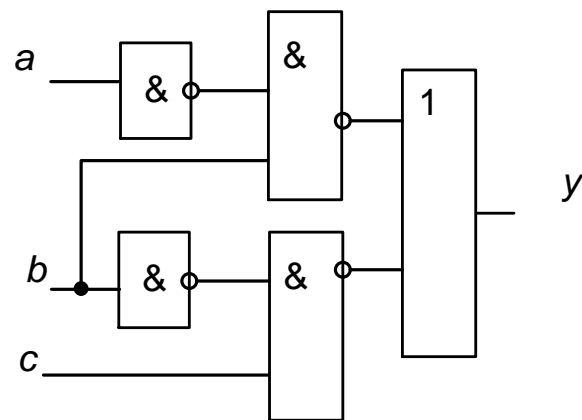


Рис. 45