

PRACTICE WORK REPORT №5

« Simple digital circuits design and simulation »

**Principles of Circuits**

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## 1. Task 1

A	B	C	$Y = \overline{AB} \cdot \overline{B} + \overline{C}$	$Y = \overline{B} \cdot \overline{C}$
0	0	0	1	1
0	0	1	0	0
0	1	0	0	0
0	1	1	0	0
1	0	0	1	1
1	0	1	0	0
1	1	0	0	0
1	1	1	0	0

## 2. Task 2

$$Y = \bar{A} \cdot B \cdot \bar{C} + \bar{A} \cdot B \cdot C + A \cdot \bar{B} \cdot \bar{C} + A \cdot \bar{B} \cdot C + A \cdot B \cdot \bar{C} + A \cdot B \cdot C$$

$$Y_{min} = A+B$$

Karnaugh map

	$\bar{C}$	C
$\bar{A}\bar{B}$	0	0
$\bar{A}B$	1	1
$AB$	1	1
$A\bar{B}$	1	1

True table

A	B	C	Y	$Y_{min}$
0	0	0	0	0
0	0	1	0	0
0	1	0	1	1
0	1	1	1	1
1	0	0	1	1
1	0	1	1	1
1	1	0	1	1
1	1	1	1	1

## 3. Conclusion

Karnaugh mapping is a systematic approach, which will always produce the simplest configuration possible for the logic circuit.