CSE260 Lab Report

Experiment Name: Applications of Kmap method

Submitted by

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Section: 05

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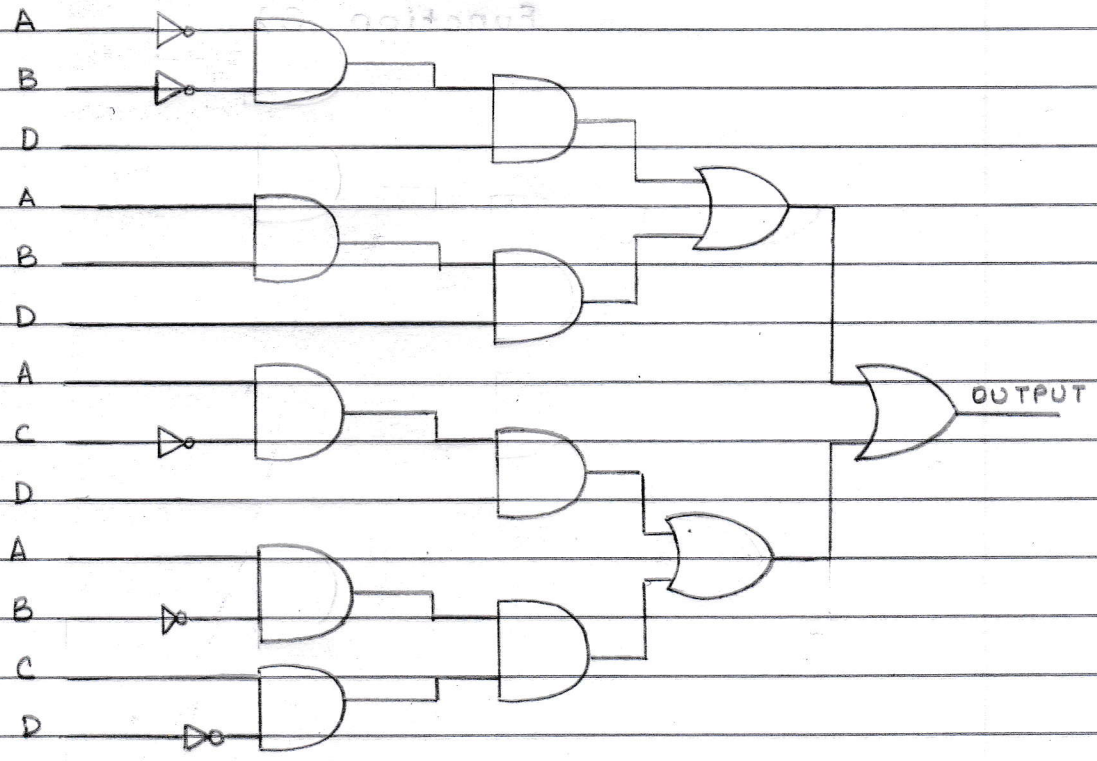
1) Name of the Experiment : Applications of Kmap method

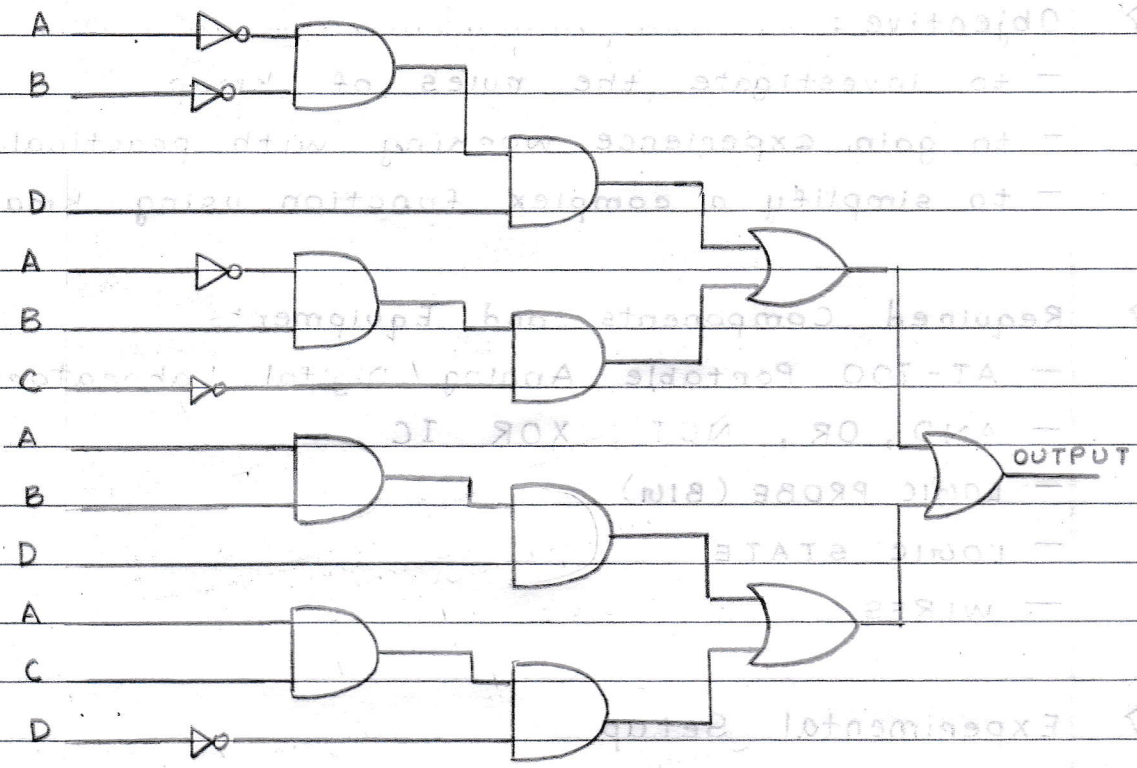
2) Objective :
- to investigate the rules of Kmap
- to gain experience working with practical circuits
- to simplify a complex function using kmap

3) Required Components and Equipments
- AT-700 Portable Analog / Digital Laboratory
- AND, OR, NOT, XOR IC
- LOGIC PROBE (BIG)
- LOGIC STATE
- WIRES

4) Experimental Setup



Function 01



Function 02

5) Results and Discussions

1. $F(A, B, C, D) = \sum (1, 3, 9, 10, 13, 15)$

	C'D'	C'D	CD	CD'
A'B'	0	1	1	2
A'B	4	5	7	6
AB	12	1 13	1 15	14
AB'	8	1 9	11	1 10

Answer = A'B'D + ABD + AC'D + AB'CD'

2. $F(A, B, C, D) = \sum (1, 4, 10, 15) + d(3, 13, 5, 14)$

	C'D'	C'D	CD	CD'
A'B'	0	1 1	X 3	2
A'B	1 4	X 5	7	6
AB	12	X 13	1 15	X 14
AB'	8	9	11	1 10

Answer = A'B'D + A'BC' + ABD + ACD'

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INPUTS				OUTPUTS
A	B	C	D	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	0
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	1
1	0	1	0	1
1	0	1	1	0
1	1	0	0	0
1	1	0	1	1
1	1	1	0	0
1	1	1	1	1

2.

INPUTS				OUTPUTS
A	B	C	D	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	0
0	0	1	1	1
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	1
1	0	1	1	0
1	1	0	0	0
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

Discussion

In this experiment, we had learnt how to construct a circuit from a given circuit by using K-map. At first, the task at hand seemed quite complicated to me. Even though I had a clear concept and understanding behind the idea of K-map, it took me some time to visualise how to use the simplified expression to construct the circuit. Then, I decided to take one step at a time, and started to evaluate the function into a simplified expression using the K-map. After I had obtained the simplified expression, I constructed the circuit using AND gates ~~and~~, OR gates and NOT gates in place of dots, pluses and primes respectively. As a result, I obtained two circuits for two functions. However, one silly problem which I faced during the experiment was that I did not connect two close components with wires. I just placed them side by side, thinking that the components were connected. It took me quite some time to realise the roots of the errors which I receiving. Once, I had secured the connections with wires, I obtained accurate results and concluded the experiment successfully.