Cse 260

Lab Assignment - 4

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Ans:

(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

offline
1. AT-700 Portable ~~Ant~~ Analog / Digital Laboratory
2. AND, OR, NOT, XOR IC.

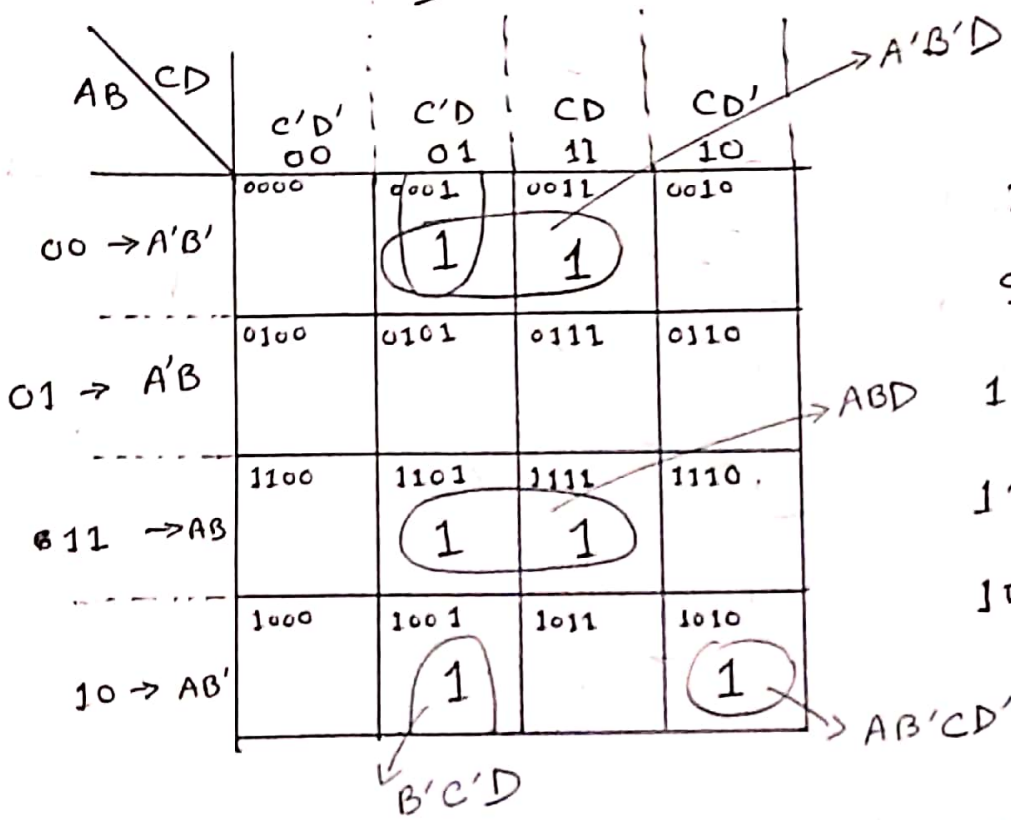
1. Logic Gates (AND, OR, NOT, XOR)
2. Inputs (~~bb~~ using logicstate)
3. LEDs (Blue and other colors)
4. Power Source
   Ground.

(4) Experimental ~~St~~ Setup.

(5.1) Results (Truth Table).

Function:

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



1 ⇒ 0001

3 ⇒ 0011

9 ⇒ 1001

10 ⇒ 1010

13 ⇒ 1101

15 ⇒ 1111.

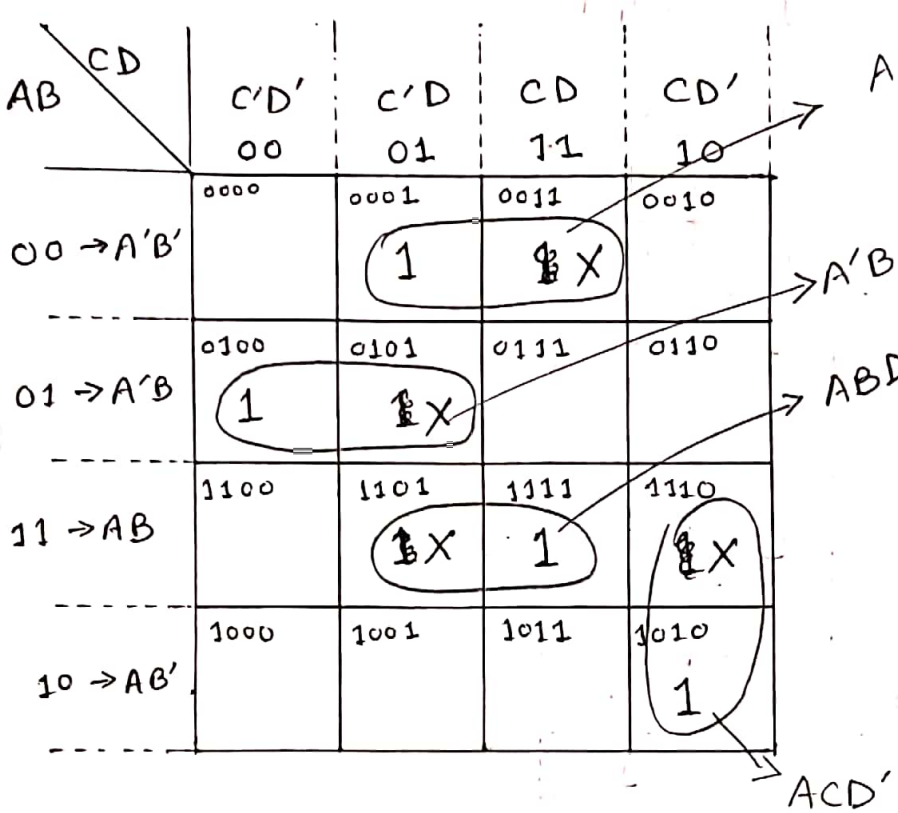
And: $A'B'D + AB'CD' + ABD + B'C'D$.

0 0 1 1 0 1 0 1 1 1 0 0 1.

~~Truth Table - 1~~.

Function:

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



1 ⇒ 0001

4 ⇒ 0100

10 ⇒ 1010

15 ⇒ 1111

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3 ⇒ 0011

5 ⇒ 0101

13 ⇒ 1101

14 ⇒ 1110

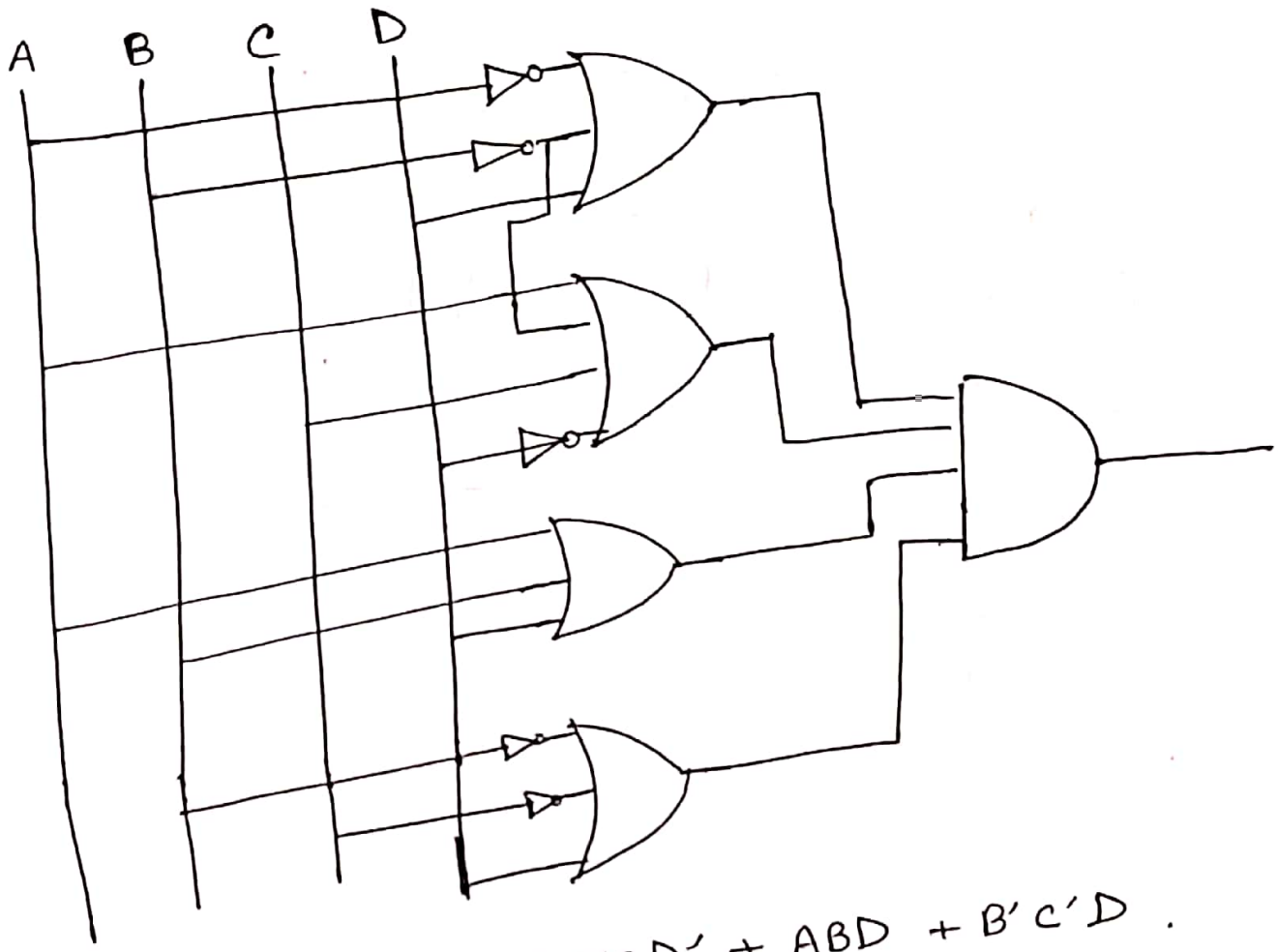
Ans: $A'BC' + ACD' + A'B'D + ABD$

010 110 001 111

~~Truth Table 2.~~

Truth Table - 1

A	B	C	D	output
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

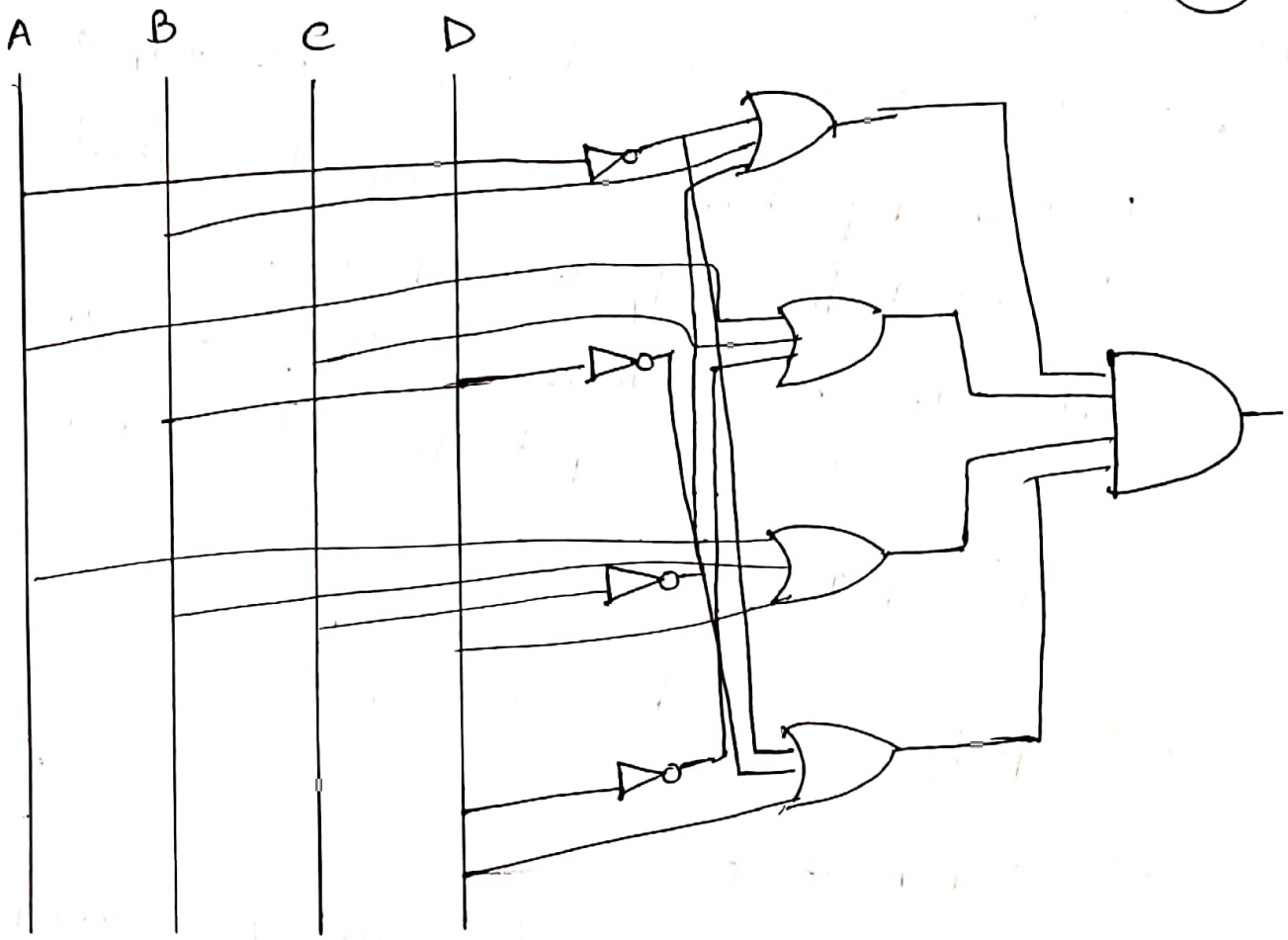


$A'B'D + AB'CD' + ABD + B'C'D$.

Experimental Setup - 1

Truth Table - 2

A	B	C	D	Output
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



$A'BC' + ACD' + A'B'D + ABD$.

Experimental Setup-2

5.2 Discussions:

- **What is Boolean Equation for the output?**

Boolean Equation is the equation that suggests what the output will be.

Through the boolean equation, we can figure out the output from the given sets of input.

- Simplify the boolean Equation.

1) ~~A'B'D =~~

$F(A, B, C, D) = A'B'D + AB'CD' + ABD + B'C'D$

2)

$F(A, B, C, D) = A'BC' + ACD' + A'B'D + ABD$