Experiment 4: Applications of KMap method.

Objective:

→ To investigate the rules of kmap.

→ To gain experiance working with ~~pooti~~ practical circuits.

→ To simplify a complex function using kmap.

Required equipments:

→ AND gate

→ OR gate

→ Not gate

→ LOGIC STATE

→ LOGIC PROBE

Function:

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

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

i) $F(A,B,C,D) = \sum(0001,0011,1001,1010,1101,1111)$

ii) $F(A,B,C,D) = \sum(0001,0100,1010,1111) + d(0011,0101,1101,1110)$

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

~~$F(A,B,C,D) = A'C'D$~~

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

A'B'D → (arrow to 1,3)
ABD → (arrow from row AB)
AB'CD' →
AC'D ↓

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

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

A'B'D →
A'BC' →
ACD' →
ABD ↓

Experimental setup : For a function (1)

A   B   C   D

A'B'D

ABD

AC'D
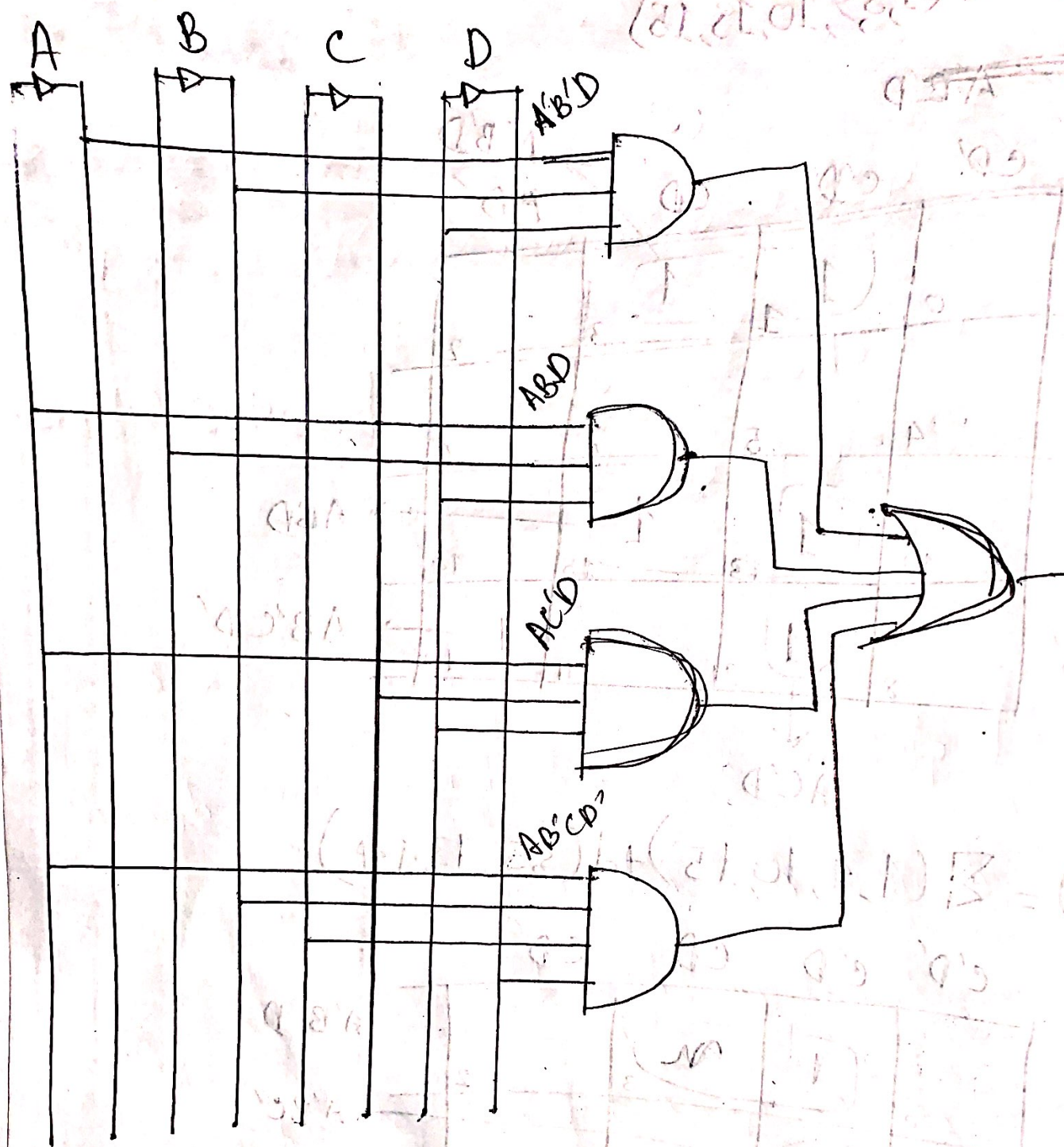
AB'CD'

For function (2)
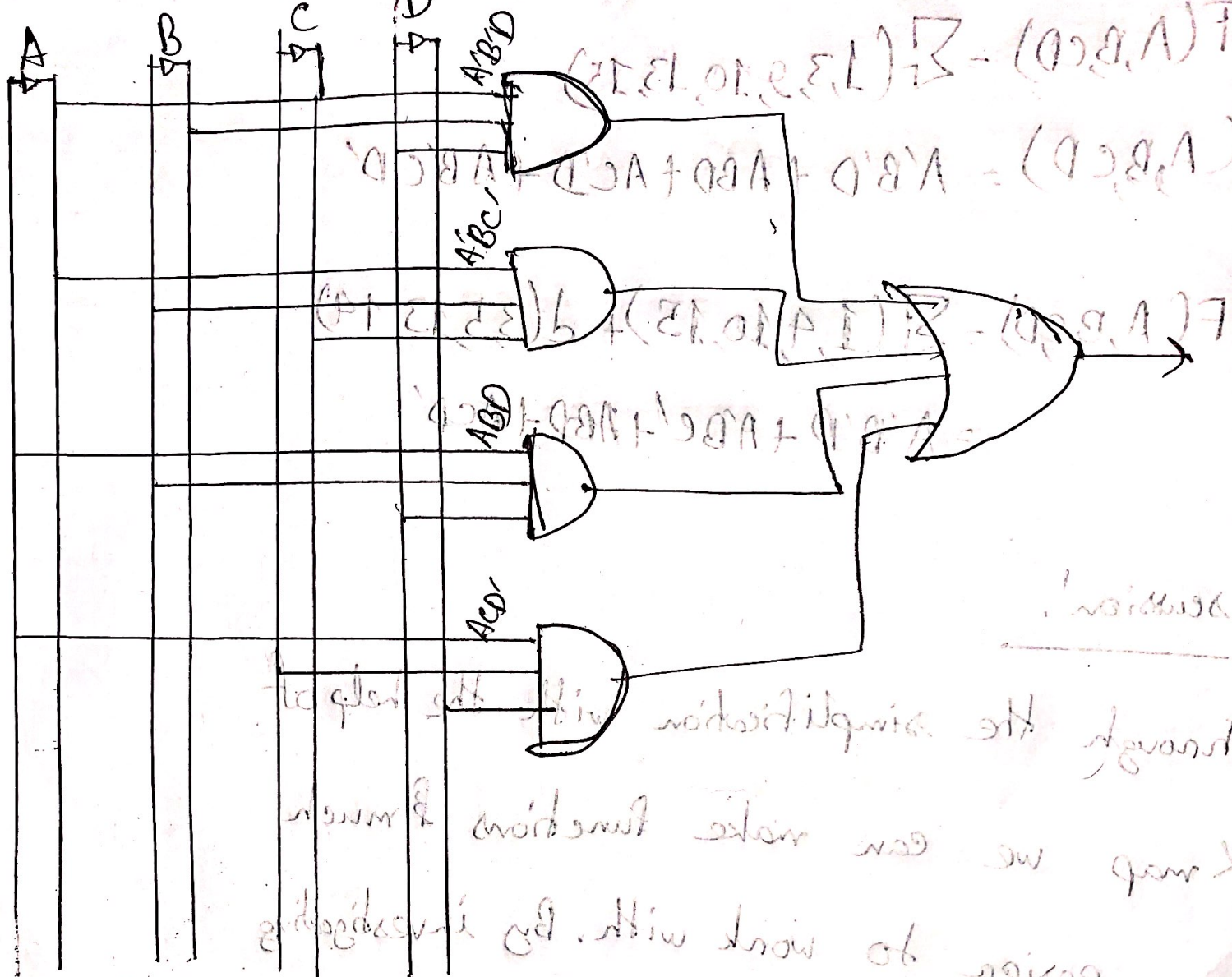
Result!

~~The~~ The output of functions from kmap are

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

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

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

$= A'B'D + ABC' + ABD + ACD'$

Discussion:

Through the simplification with the help of Kmap we can make functions & much more easier to work with. By investigating ~~through~~ with the rule of Kmap we can simplify any complex function.