

LAB ASSIGNMENT 24

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SECTION: 6

LAD ASSIGNMENT 1

Report

(1) Name of the Experiment:
Applications of Kmap methods

(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

AND

NOT

OR

LOGIC STATE

LOGIC PROBE

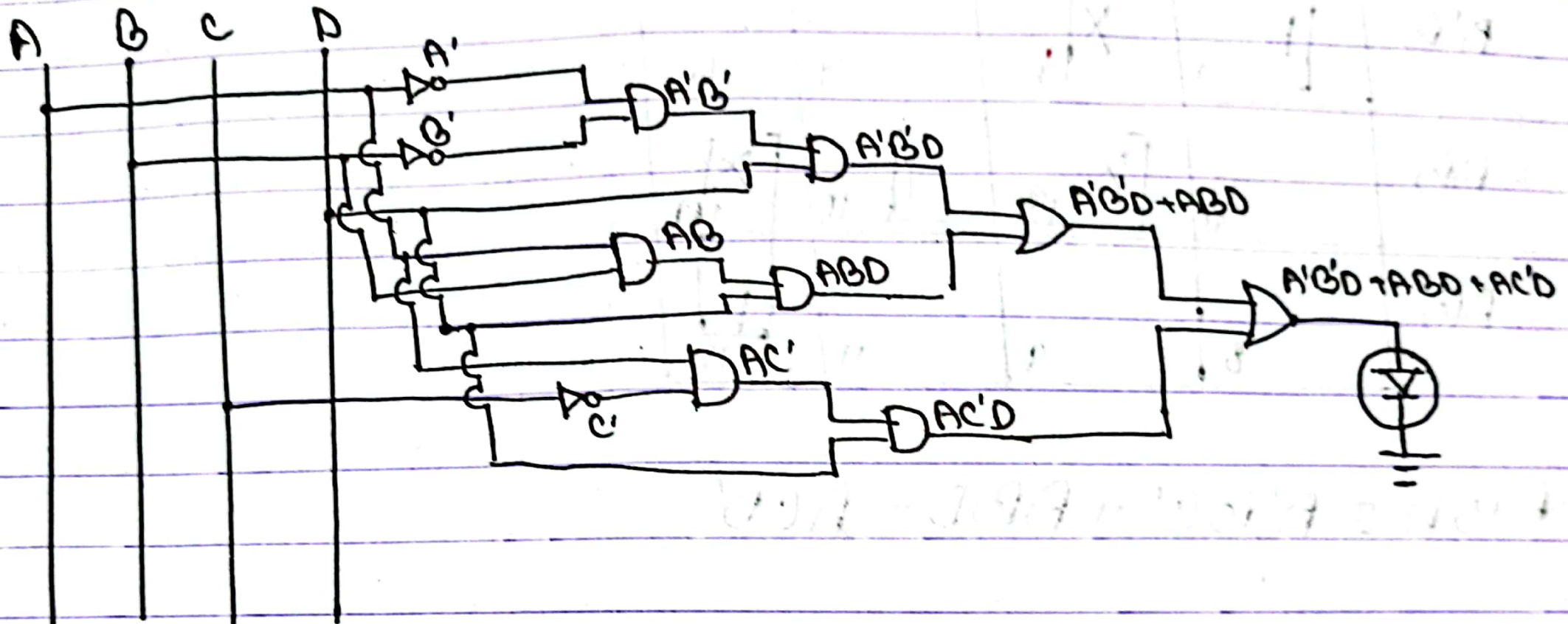
LED - AQUA

LED - YELLOW

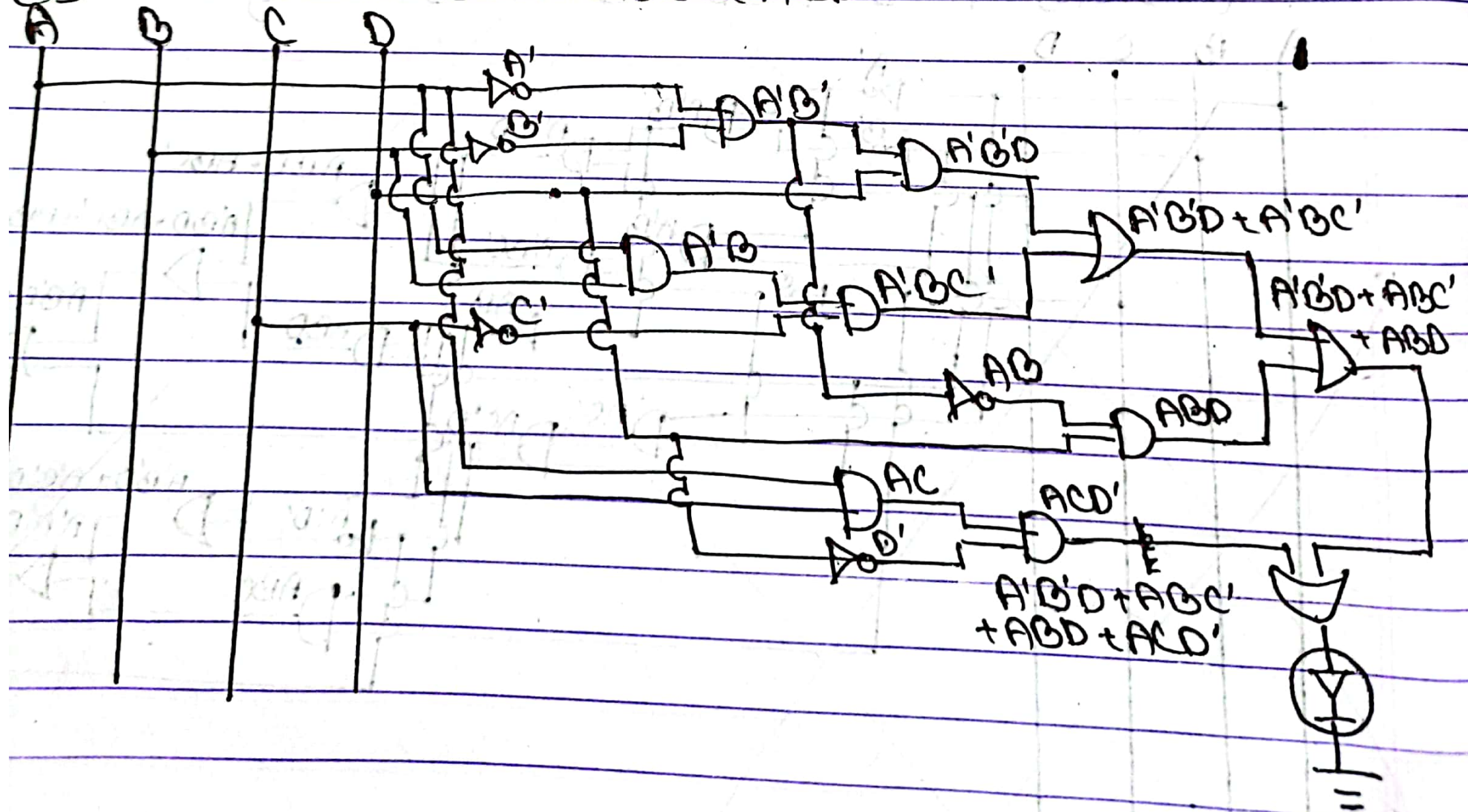
GROUND

(2) Experimental Setup

$$(1) F(A, B, C, D) = A'B'D + ABD + AC'D$$



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



(A) Results (Truth Tables) and Discussions.

Truth Table:

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

| 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 | 0 |
| 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 |

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

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

| A | B | C | D | Output |
|---|---|----------------|---|----------------|
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 1 | 1 |
| 0 | 0 | 1 | 0 | 0 0 |
| 0 | 0 | 1 | 1 | X |
| 0 | 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 1 | X |
| 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 | 0 1 | 1 | 0 |
| 1 | 1 | 0 | 0 | 0 |
| 1 | 1 | 0 | 1 | X |
| 1 | 1 | 1 | 0 | X |
| 1 | 1 | 1 | 1 | 1 |

$$A'B'C'D + A'BC'D' + AB'CD' + A'B'C'D'$$

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

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

$$A'B'D + ABD + AC'D$$

$$D(A'B' + AB + AC')$$

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

| | C'D' | C'D | CD | CD' |
|------|------|-----|----|-----|
| A'B' | | 1 | X | |
| A'B | 1 | X | | |
| AB | | X | 1 | X |
| AB' | | | | 1 |

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