

LAB 3 – REPORT

roll no: 210010062

IMPLEMENTATION OF CIRCUIT USING CMOS

Aim: Implementing the circuits given using the IC's through a CMOS /MOSFET connection.

Summary of the Experiment: Solving the given circuit problem using the appropriate gate and implementing it by using a CMOS MOSFET.

Components Used: IC HCF 4007, 2Kohm resistor array, DIP switches, LED displays, breadboard, multimeter, and power supply.

Circuit Diagrams & Snapshots :

1) 2 switches lets say, A & B.

Cond: If Both switches are at same state, then only the Bulb can be turned "ON or OFF"

so,

A	B
0	0
1	1

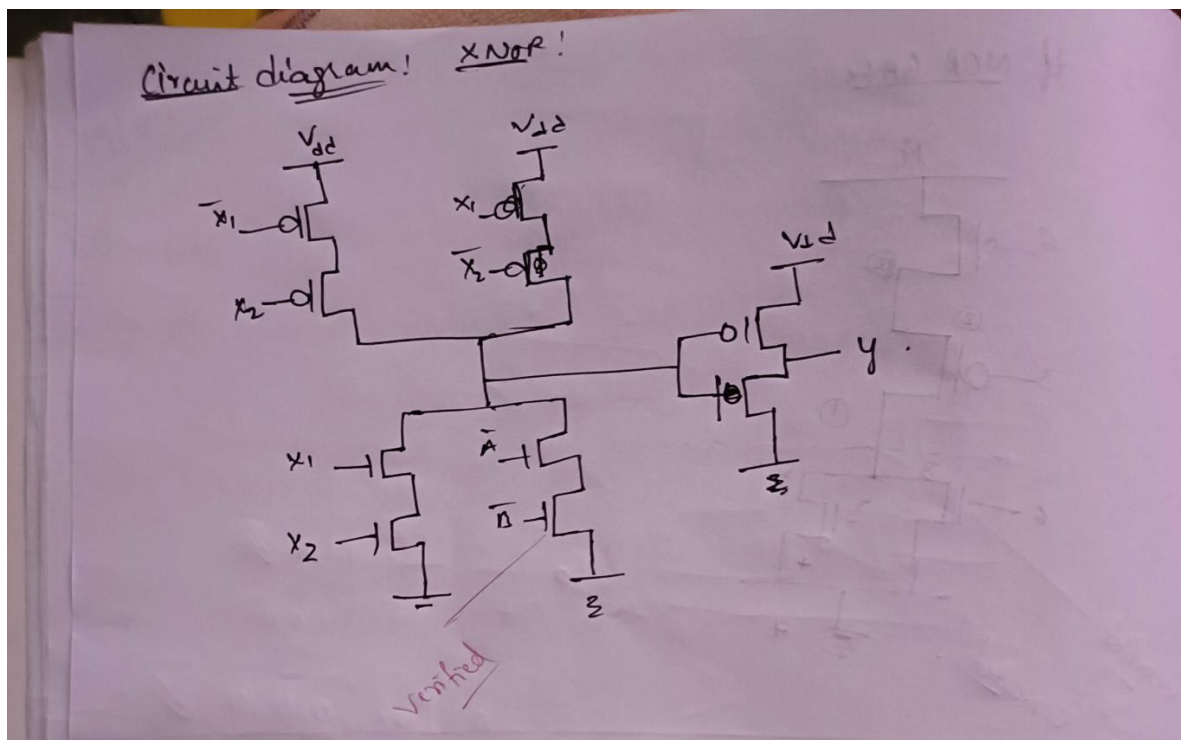
$\bar{A} = AB$

it gives XNOR Gate.

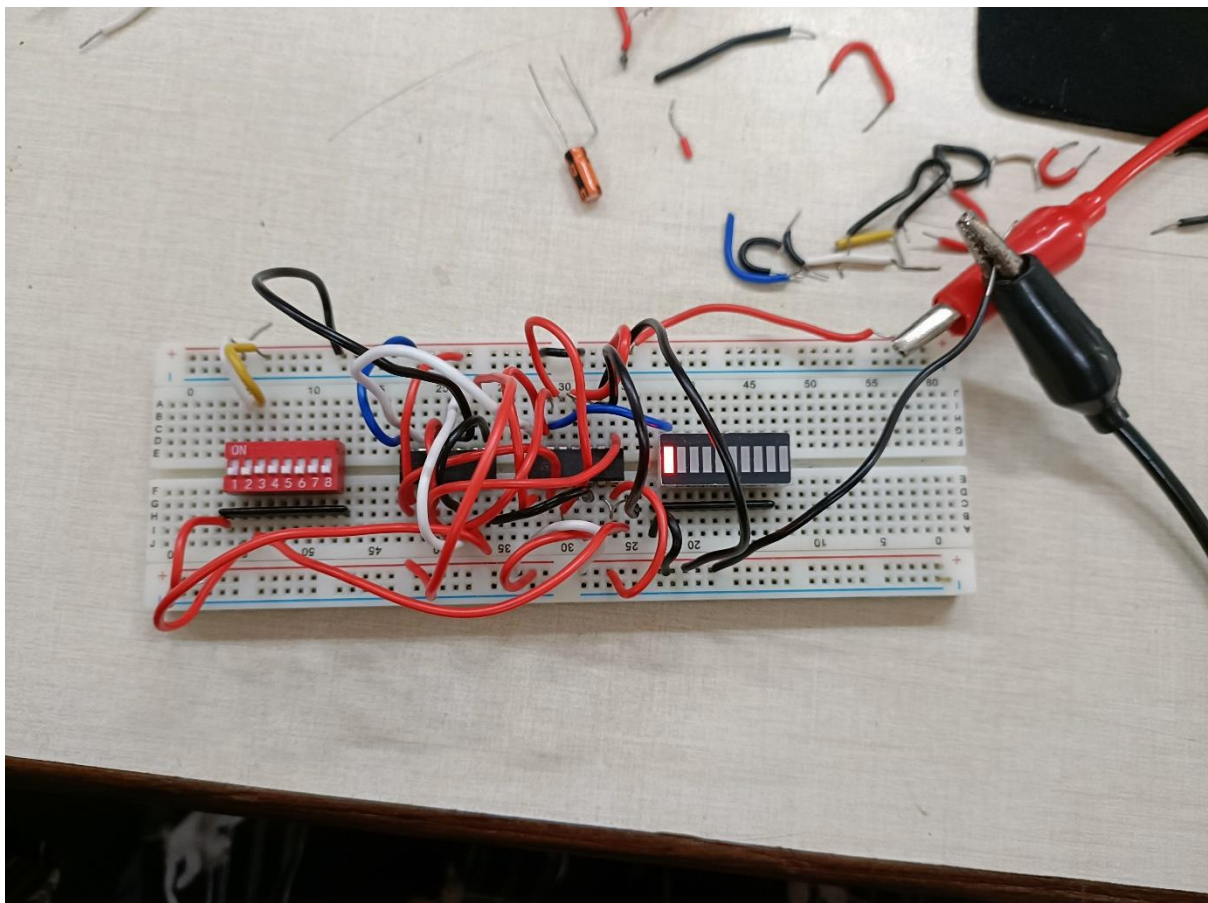
$$Y = A.B + \bar{A}.\bar{B}$$

XNOR Truth table

A	B	$Y = \bar{A}B + A\bar{B}$
0	0	1
1	1	1



PROBLEM1 :



PROBLEM 2 :

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2) lets say,

→ if Alarm indicates if any door is open.

so lets take logic 'A' for
the door open or close.

→ The ^{alarm of} seat belt fastened as logic 'B'.

so, The condition:

if both switches alarms are off → then Ignition "ON"

∴ if Both $A \ \& \ B = 0 \ \& \ 0$

∴ $Y = 1$ (ignition ^{= Y} on)

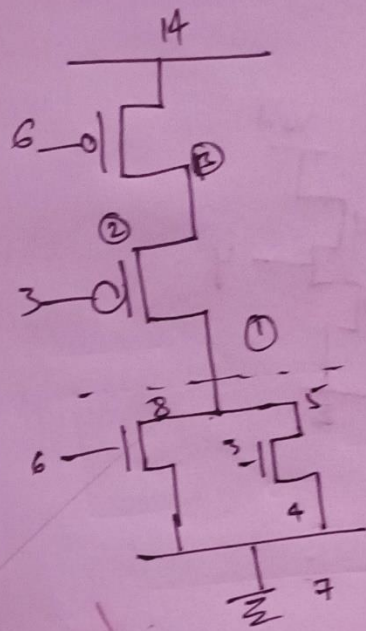
Logic table for this:

$$\overline{A+B} = Y \quad [\text{NOR Gate}]$$

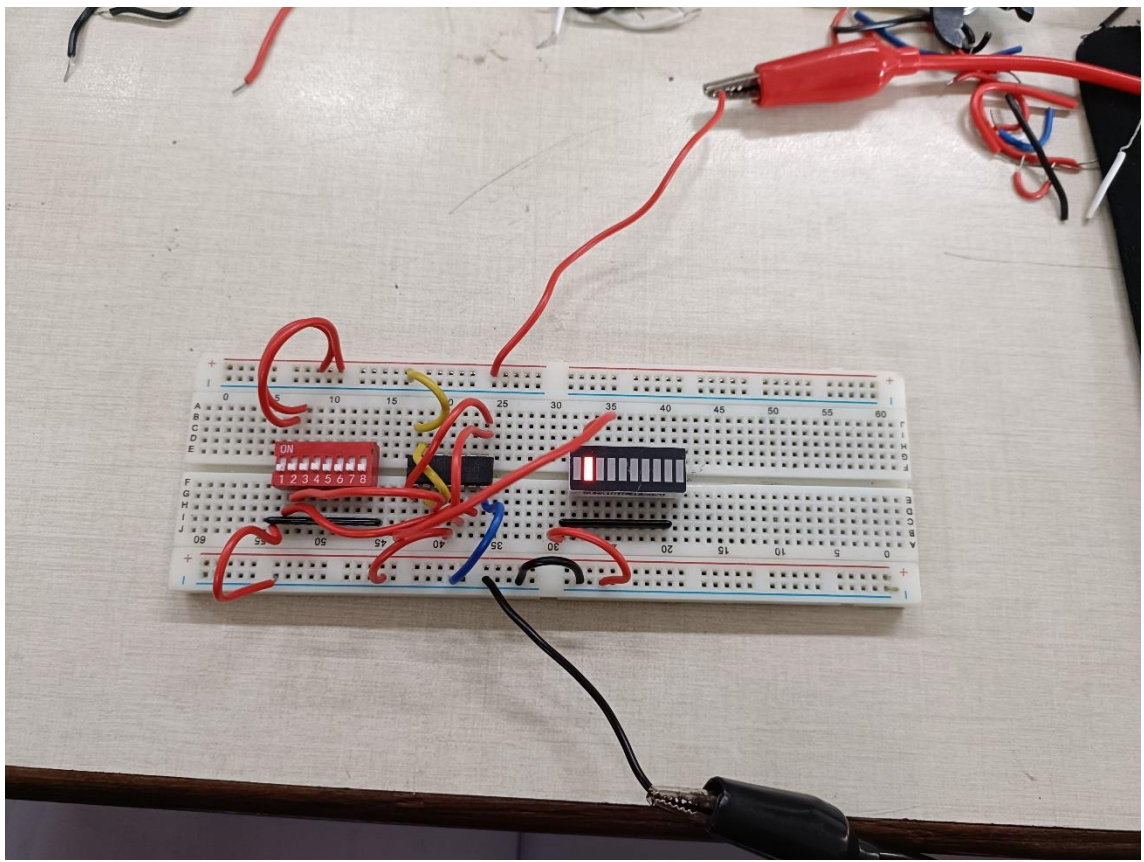
Truth table:

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

CMOS NOR GATE :



Verified
Entered



Results &Discussions :

- 1) The first circuit problem is executed using the XNOR gate because it is given the action of ON or OFF of logic 1 which is obtained when both switches are in the same state as its logic is 0. We use two HCF4007 IC's to implement this gate.*

- 2) The second circuit problem is executing using NOR gate because it's given that bulb will turn ON when only both switches are OFF. We use one HCF4007 IC to implement this gate.*

Conclusion :

- Circuit problem 1 is implemented using the XNOR gate.*
- Circuit problem 2 is implemented using NOR gate.*

THE END
