Department of Computer Science
Faculty of Computing
UNIVERSITI TEKNOLOGI MALAYSIA

SUBJECT : SCSR1013 DIGITAL LOGIC

SESSION/SEM : …….

LAB 1 : COMBINATIONAL LOGIC

NAME 1 : YOUSSEF HESHAM KHAIRAT

NAME 2 : ……

DATE : ……

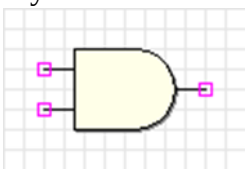
:

D. Preiminary Work

1. Draw a symbol, determine the IC number and produce a truth table for the following gate.

AND

Symbol:



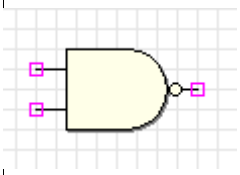
IC Number: ……7408……..

Truth Table 1

Input		Output
A	B	F
0	0	0
0	1	0
1	0	0
1	1	1

NAND

Symbol:

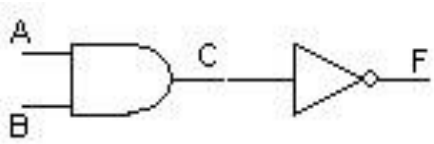


IC Number: ……4011……..

Truth Table 2

I put		Output
A	B	F
0	0	1
0	1	1
1	0	1
1	1	0

2. Complete the truth table for the following circuit.

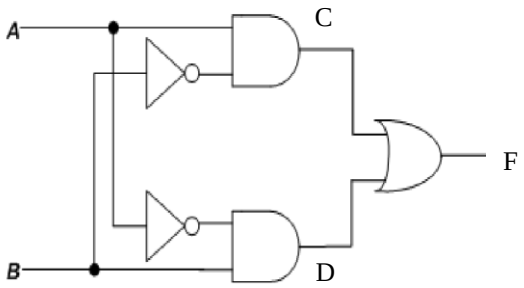


Truth Table 3

A	B	C	F
0	1	0	1
1	0	0	1

1	1	1	0
0	0	0	1

3. Write the Boolean expression for output C, D and F the following circuit.



C = Q = NOTB. A

D = Q = NOTA. B

F = Q = D+C

4. Complete the truth table for the circuit in (3) based on the Boolean expression produced for C, D and F.

Truth Table 4

A	B	C	D	F
0	0	0	0	0
1	0	1	0	1
0	1	0	1	1
1	1	0	0	0

E. Laboratory Work

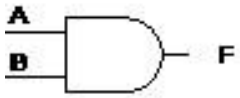
Part 1

1. Construct Circuit 1 on the breadboard. Connect all inputs (A, B) to a switches and output F to LEDs.

Truth Table 5

Input		Output
A	B	F
0	0	0
1	0	0
0	1	0
1	1	1

Circuit 1

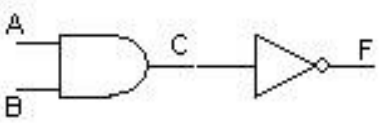


2. Test Circuit 1 and fill in Truth Table 5 for the circuit response to all possible input combinations. The Truth Table 5 should match the Truth Table 1 prepared in the Preliminary Work.

Part 2

3. Construct Circuit 2 on the breadboard. Connect all inputs (A, B) to a switches and output C and F to LEDs.

Truth Table 6



Circuit2

A	B	C	F
0	0	0	1
1	0	0	1
0	1	0	1
1	1	1	0

4. Test Circuit 2; fill in Truth Table 6, for the circuit response to all possible input combinations.

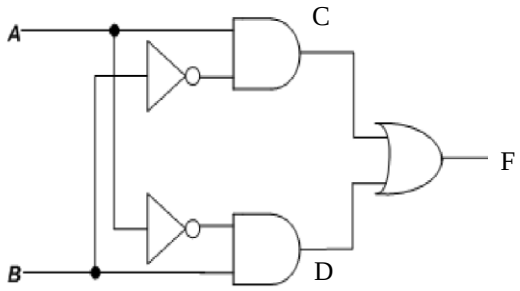
5. Compare Truth Table 6 to Truth Table 2. What conclusion can you make?

For truth table 2 it was about **NAND GATE** (not and gate) which directly revers the ANDGATE work in one processing step but in truth table 6 it was about **AND GATE** and **NOT GATE** which mean after processing the in put in **AND GATE** the out put will enter to **NOT GATE** AS input so the process of the revers become in two processing steps

Part 3

6. Construct circuit 3 on the breadboard. Connect all inputs (A, B) to a switches and output C, D and F to LEDs.

Circuit 3



Truth Table 7

A	B	C	D	F
0	0	0	0	0
1	0	1	0	1
0	1	0	1	1
1	1	0	0	0

7. Test Circuit 3; fill in Truth Table 7 for the circuit outputs (C, D, and F) for all possible input combinations.

8. What single gate does Circuit 3 represent?

NOT Gate

Video Explanation of laboratory work

https://www.youtube.com/watch?v=yLllRVPThUY