19 . 05 . 25

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OAC

1. Porta NOT:

Entrada = 1

Saída = 0;

2. Porta AND:

A = 0;

B = 1;

SAÍDA = 0;

3. Porta OR:

A = 1;

B = 1;

SAÍDA = 0;

4. Combinação NOT + AND:

A = 1;

B = 0;

NOT (1) = 0

0 AND 0 = 0;

5. Combinação OR + NOT:

A = 0;

B = 0;

NOT (0 OR 0)

NOT (0) = 1;

6. Expressão lógica:

A = 1;

B = 0;

(1 AND 0) OR (NOT 1)

0 OR 0 = 0;

7. Tabela - Verdade:

(A OR B) AND NOT (B)

A	B	A OR B	NOT (B)	(A OR B) AND NOT (B)
0	0	0	1	0
0	1	1	0	0
1	0	1	1	1
1	1	1	0	1

8. Circuito com multiplas portas:

A = 1;

B = 1;

NOT (1 AND 1) OR (1 OR 1)

NOT (1) OR 1

0 OR 1 = 1;

9. Simplificação do circuito:

A = 0;

B = 1;

Saida = 1;

NOT (0) AND 1

$X = \overline{A} . B$

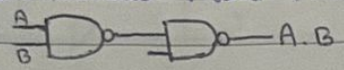
$1 = \overline{0} . 1$

10. Usando as simplificações:

(A OR A) AND NOT(A)

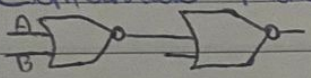
A AND NOT(A);

11. Combinação para NAND:



A	B	A.B	$\overline{A.B}$
0	0	0	1
0	1	0	1
1	0	0	1
1	1	1	0

12. Combinação para NOR:



A	B	NOR($\bar{A}$,$\bar{A}$)	NOR($\bar{B}$,$\bar{B}$)	NOR($\bar{A}$,$\bar{B}$)
0	0	1	1	0
0	1	1	0	1
1	0	0	1	1
1	1	0	0	1

13. XOR com NAND:

$A \oplus B = [NAND(A\ NAND\ B)]\ NAND\ (B\ NAND\ (A\ NAND\ B))$

14. XNOR com NOR:

$\overline{A \oplus B} = (A\ NOR\ (A\ NOR\ B))\ NOR\ (B\ NOR\ (A\ NOR\ B))$

15 Equivalência lógica:

(A XOR B) = (A XNOR B)'

A	B	A.B	$\overline{A.B}$	A⊕B
0	0	1	0	0
0	1	0	1	1
1	0	0	1	1
1	1	1	0	0

16. Simplificação do Circuito:

$Y = (A \text{ NAND } B) \text{ NOR } (C \text{ NAND } D)$

$Y = \overline{(A.B)} \text{ NOR } \overline{(C.D)}$

$Y = \overline{\overline{(A.B)} + \overline{(C.D)}}$

$Y = \overline{(\overline{A.B}).(\overline{C.D})}$

$Y = (A.B).(C.D)$

$Y = A.B.C.D$

17. Meio somador (Half - Adder):

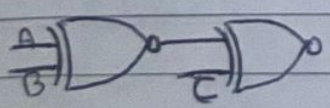
XOR e AND

$S = A \oplus B$

$C = A.B$

18. Ilustração do Paraboll:

Circuito XOR/XNOR



19. Porta Universal

a) Porta NAND

NAND e NOT

A	A AND A	NOT (A)
0	1	1
1	0	0

NAND e AND

A	B	A NAND B	NOT (A NAND B)	A AND B
0	0	1	0	0
0	1	1	0	0
1	0	1	0	0
1	1	0	1	1

NAND e OR

A	B	NOT A (com NAND)	NOT B (com NAND)	(NOT A) NAND (NOT B)
0	0	1	1	0
0	1	1	0	1
1	0	0	1	1
1	1	0	0	1

b) Porta NOR

NOT e NOR

A	NOR A e A	NOT (A)
0	1	1
1	0	0

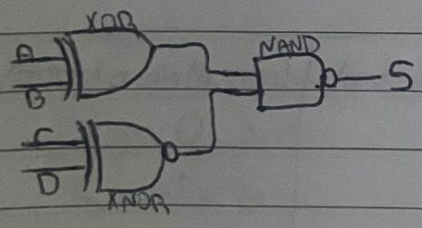
OR & NOR

A	B	A NOR B	NOT (A NOR B)	A OR B
0	0	1	0	0
0	1	0	1	1
1	0	0	1	1
1	1	0	1	1

AND & NOR

A	B	NOT A (NOR)	NOT B (NOR)	(NOT A) NOR (NOT B)	A AND B
0	0	1	1	0	0
0	1	1	0	0	0
1	0	0	1	0	0
1	1	0	0	1	1

20 Channel Combinado



A	B	C	D	(A XOR B)	(C XNOR D)	S=(A XOR B) NAND (C XNOR D)
0	0	0	0	0	1	1
0	0	1	1	0	0	1
0	0	0	0	0	0	1
0	0	1	1	0	1	1
0	1	0	0	1	1	0
0	1	1	1	1	0	1
0	1	0	0	1	0	1
0	1	1	1	1	1	0
1	0	0	0	1	1	0
1	0	1	1	1	0	1
1	0	0	0	1	0	1
1	0	1	1	1	1	0
1	1	0	0	0	1	1
1	1	1	1	0	0	1
1	1	0	0	0	0	1
1	1	1	1	0	1	1