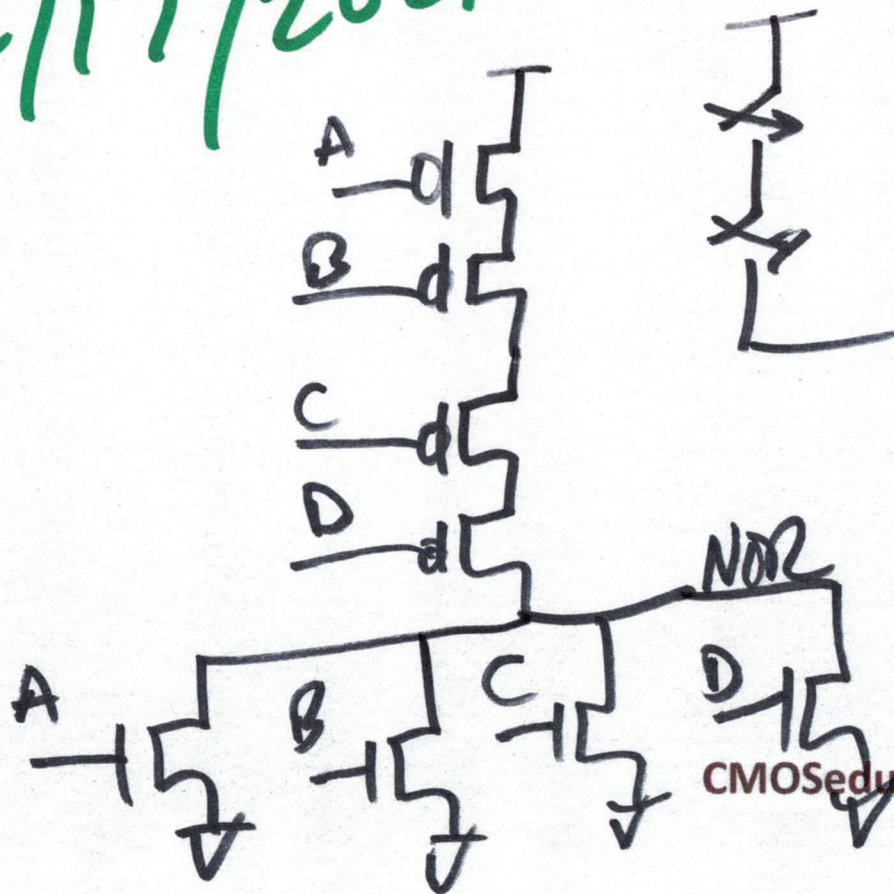


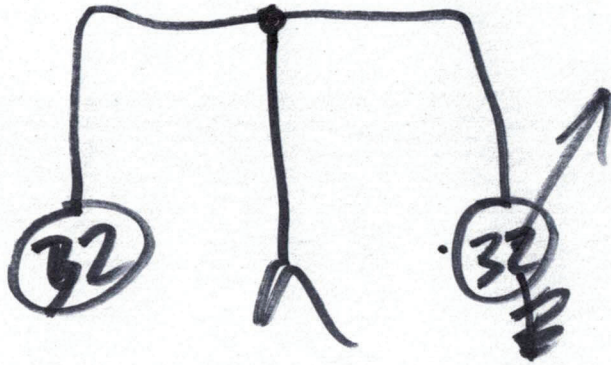
CPE 100 Digital Logic Design

Lecture 8

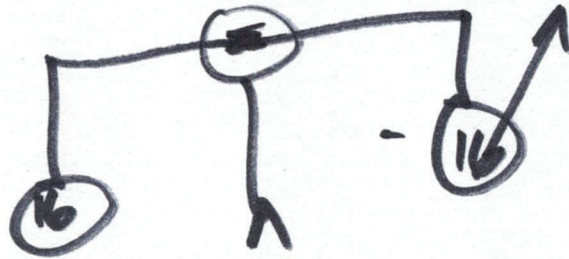
2/17/2021

A	B	NOR
0	0	1
0	1	0
1	0	0
1	1	0

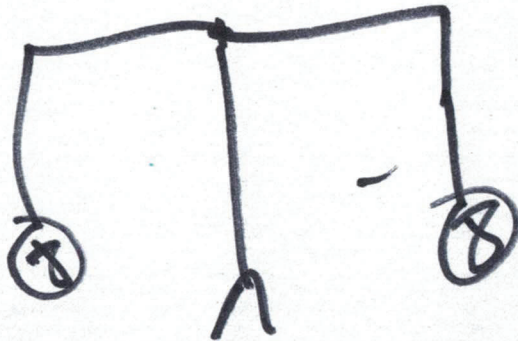




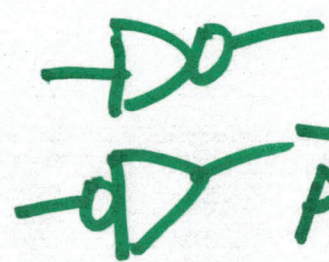
4 .



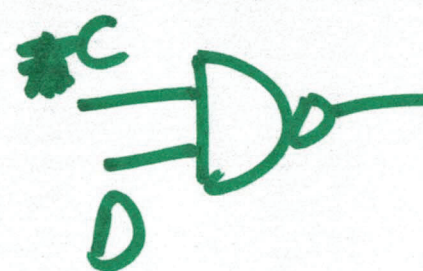
2 .



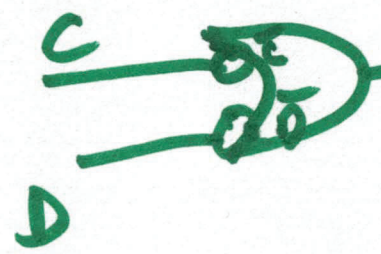
A	B	XOR
0	0	0
0	1	1
1	0	1
1	1	0



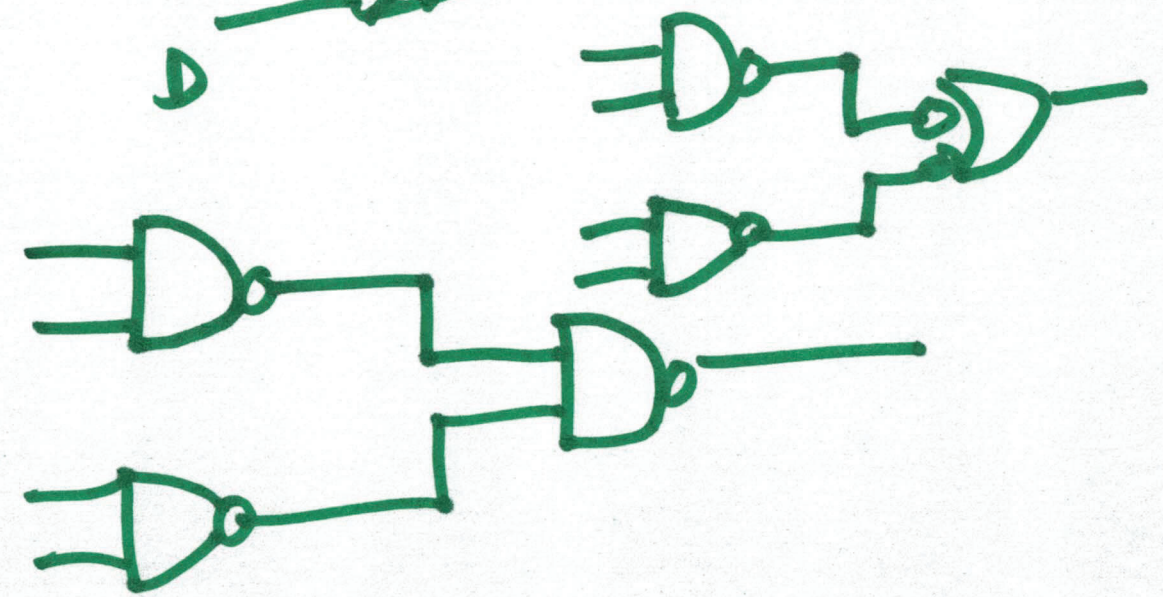
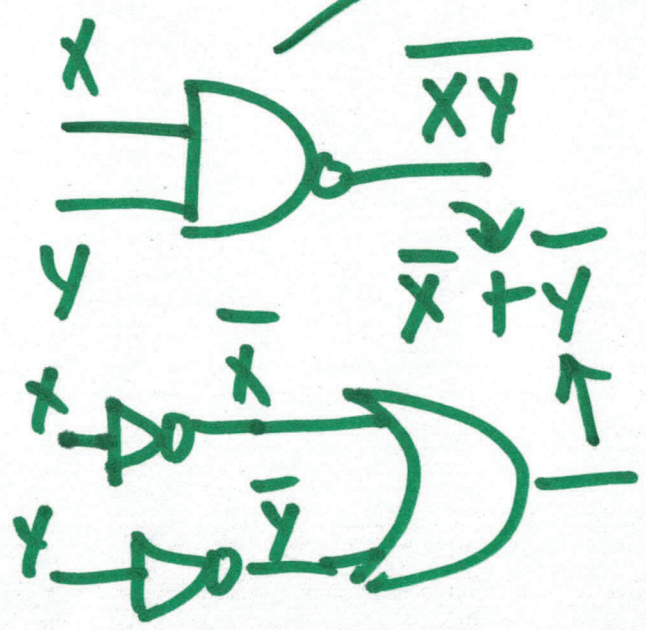
$$\bar{A}B + A\bar{B} = \text{XOR}$$



$$\bar{C}D = \bar{C} + \bar{D}$$



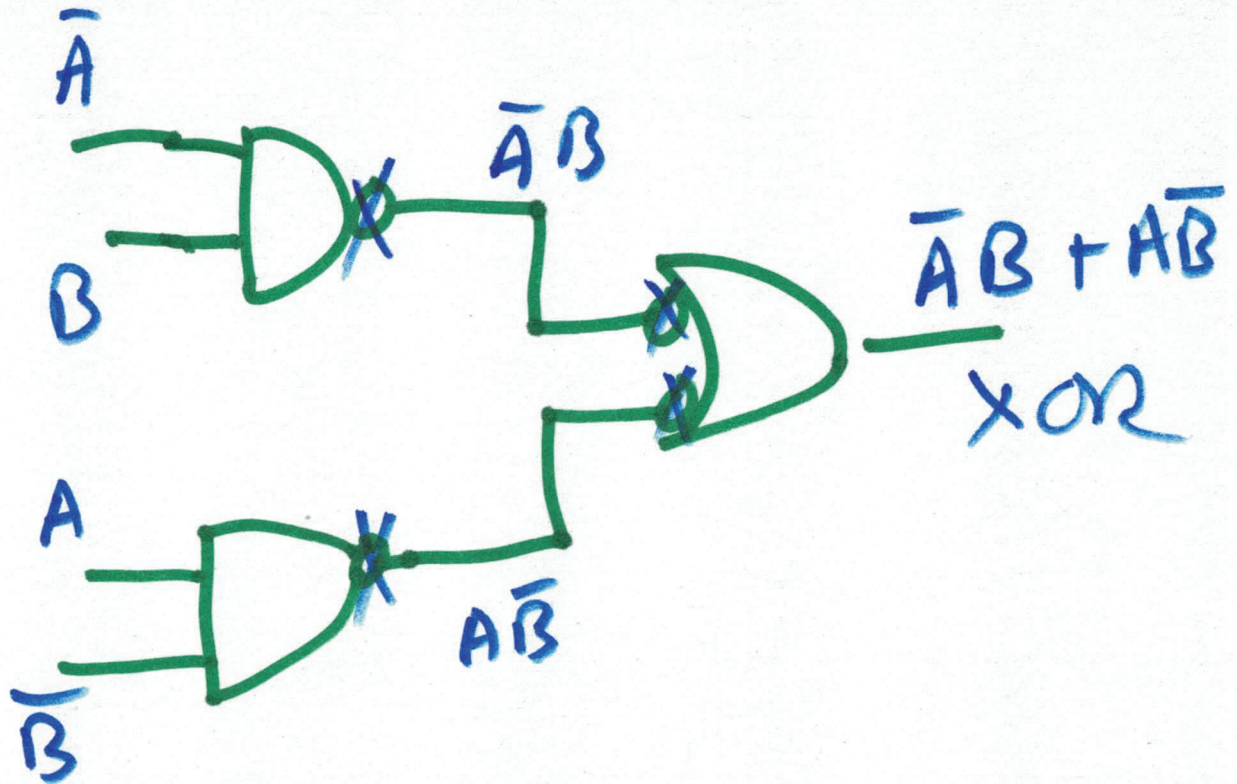
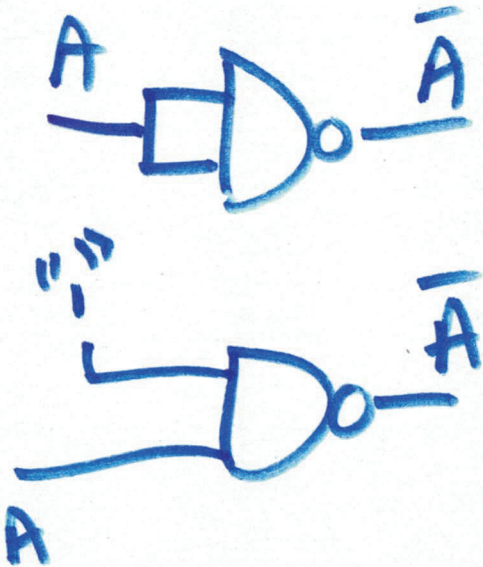
$$\bar{C} + \bar{D} = \overline{CD}$$



3)

A	B	XOR
0	0	0
0	1	1
1	0	1
1	1	0

$$XOR = \bar{A}B + A\bar{B}$$



4)

A ₃	A ₂	A ₁	A ₀	Dec	
0	0	0	0	0	X
0	0	0	1	1	1
0	0	1	0	2	0
0	0	1	1	3	0
0	1	0	0	4	0
0	1	0	1	5	0
0	1	1	0	6	0
0	1	1	1	7	0
1	0	0	0	8	0
1	0	0	1	9	0
1	0	1	0	10	0
1	0	1	1	11	0
1	1	0	0	12	X
1	1	0	1	13	X
1	1	1	0	14	X
1	1	1	1	15	X

KARNAUGH-MAP

$$\bar{A}_3 \bar{A}_2 + \bar{A}_3 A_2$$

A₃A₂ / A₁A₀

	00	01	11	10
00	X	0	1	1
01	1	1	X	0
11	1	1	X	0
10	0	0	X	1

$$Y = \bar{A}_3 \cdot A_0 + A_3 \bar{A}_0$$

X - don't care

5)

$$y = \overline{A_3} \cdot A_0 + A_3 \overline{A_0}$$

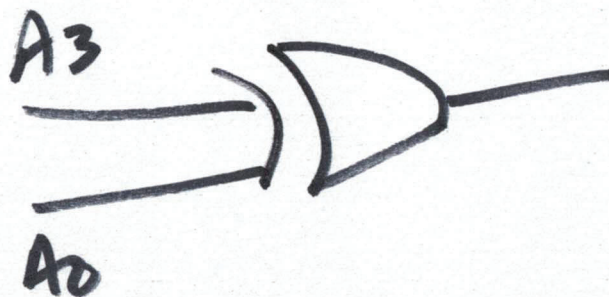
$\begin{matrix} \text{A}_3 & \text{A}_2 & \text{A}_1 & \text{A}_0 \\ 0 & 0 & 0 & 1 \end{matrix}$

$\begin{matrix} \text{A}_3 & \text{A}_0 \\ 0 & 1 \end{matrix} \Rightarrow 1$

0010

1010 → 10

A_2



$$z = ABC\bar{B}$$

C \ AB	00	01
0		
1		

C \ AB	00	01	11	10
0	0	0	0	0
1				



$$Z = AB + BC$$

	AB		B	
C	00	01	11	10
0	0	0	1	0
1	0	1	1	0

$$AB + BC$$