

CPE 100

Digital Logic

Feb. 22, 2021

DESIGN

Lecture 9

$$Z = ABC\bar{D} + \overline{ABC\bar{D}} + \overline{A+B+C+D}$$

$$Z = ABC\bar{D} + A(\bar{B} + \bar{C} + \bar{D})$$

$$\downarrow$$
$$\bar{A}\bar{B}\bar{C}\bar{D}$$

$$A\bar{B} + \bar{C}A + A\bar{D}$$

	AB			
CD	00	01	11	10
00	1	0	1	1
01	0	0	1	1
11	0	0	0	1
10	0	0	1	1

$$z = ABC\bar{D} + A\bar{B} + \bar{C}A + A\bar{D}$$

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

$$z = ABC\bar{D} + \overline{A + B + C + D}$$

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

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

$$z = 0$$

$$Y = ABCD + \bar{A}B\bar{C}D + (\bar{B} + \bar{D}) \cdot E$$

		AB			
		00	01	11	10
CDE	000				
	001				
	010				
	011				
	110				
	100				
	101				
	100				
	100				

000	0
001	1
011	3
010	2
110	6
111	7
001	5
000	4
0	

3)

CDE	AB			
	00	01	11	10
000	0	0	0	0
001	0	1	1	0
011	0	1	0	0
010	0	1	0	0
110	0	0	1	0
111	0	0	1	0
101	0	1	1	0
100	0	0	0	0

$$Y = ABCD + \bar{A}B\bar{C}D + \overline{(\bar{B} + D)} \cdot \bar{E}$$

$$\overline{(\bar{B} + D)} \cdot \bar{E}$$

$$B \cdot \bar{D} \cdot \bar{E}$$

$$Y = B \cdot \bar{C} \cdot \bar{D} \cdot E + \bar{A}B\bar{C}D + ABCD + B\bar{C}\bar{D}E$$

$$Z = B \cdot (D + E) \cdot (\bar{A} + C + \bar{D}) \cdot (A + \bar{C} + D)$$

$$(B + C)(D + E)(A + B)$$

4)

$$Y = ABCD + \bar{A}B\bar{C}D + \overline{(\bar{B} + D)} \cdot E$$

		AB			
		00	01	11	10
CD	00				
	01		1		
	11			1	
	10				
	00				

failure

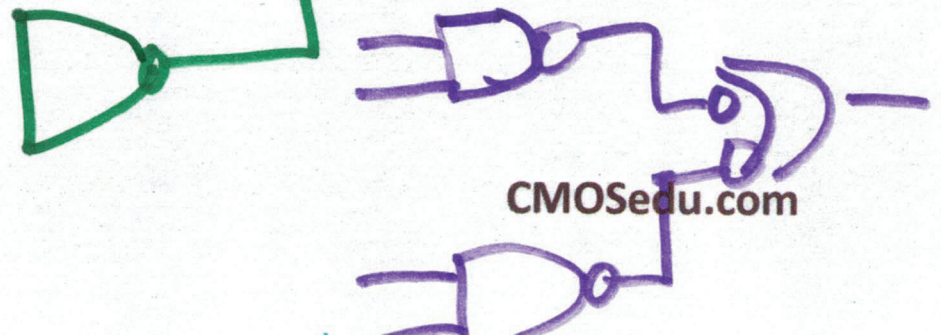
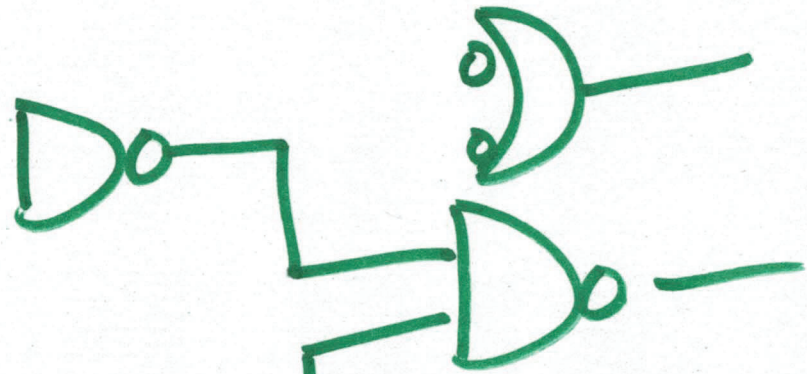
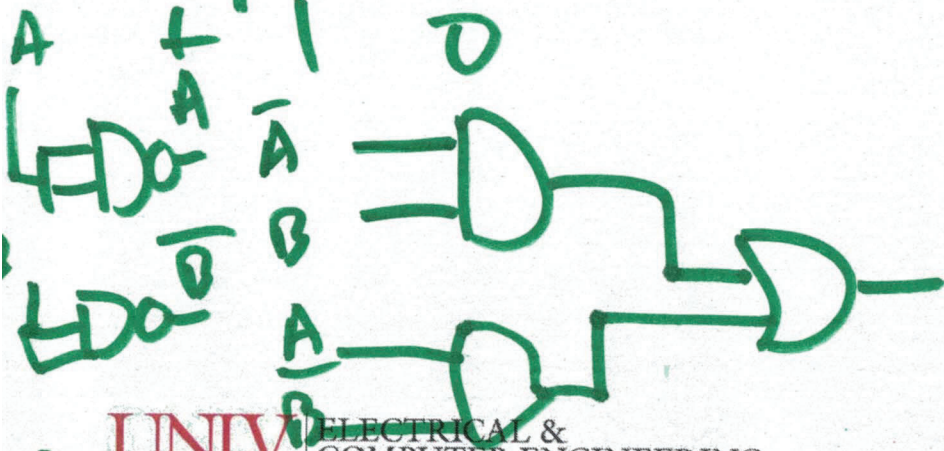
	A	0	1
B	0	0	1
	1	1	0

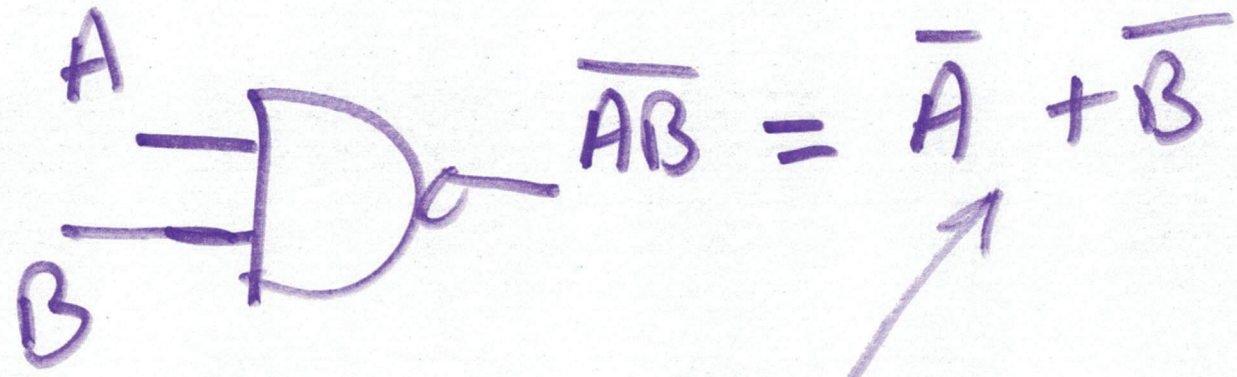


A	B	XOR
0	0	0
0	1	1
1	0	1
1	1	0

$$z = \bar{A} \cdot B + A \bar{B}$$

$$z = (A+B) \cdot (\bar{A} + \bar{B})$$





$$\overline{AB} = \overline{A} + \overline{B}$$

