

on  
Feb 24-26 , test I, Feb 25

upload old test

$$f = \sum m(?, ?, ?, ?)$$

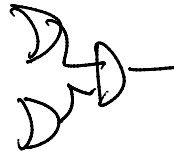
NAND only network

SOP → bubbles  
Demorgan's

NOR only network

? 

POS



Given  $f = \sum m(0, 1, 2, 3, 7)$

$\prod M(4, 5, 6)$

1s

0s

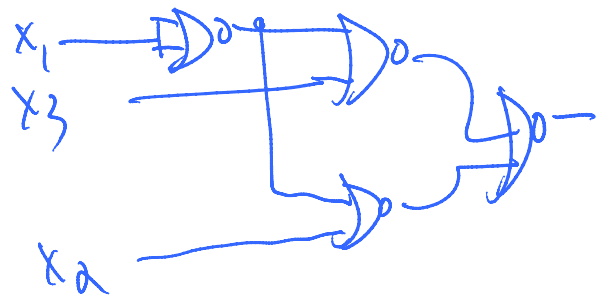
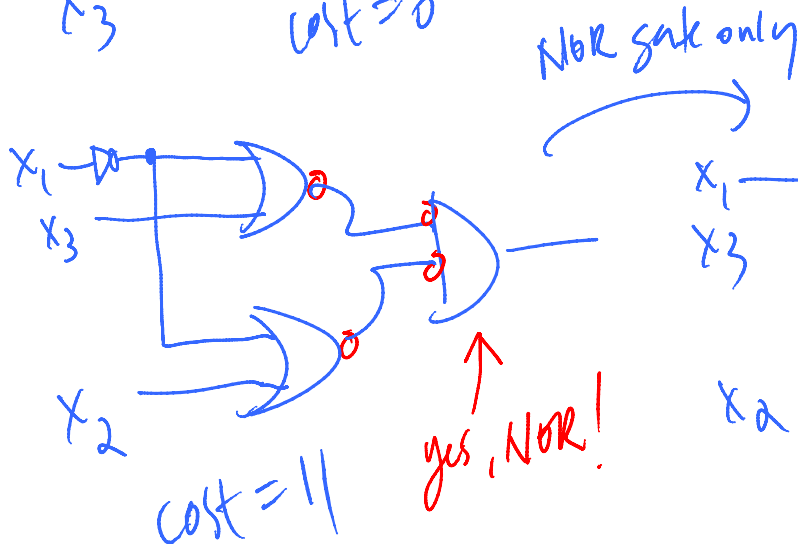
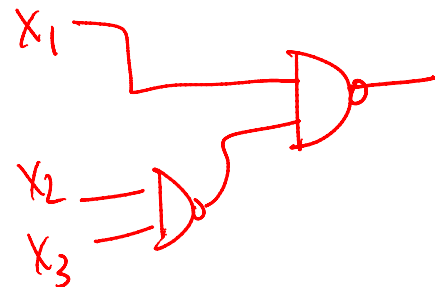
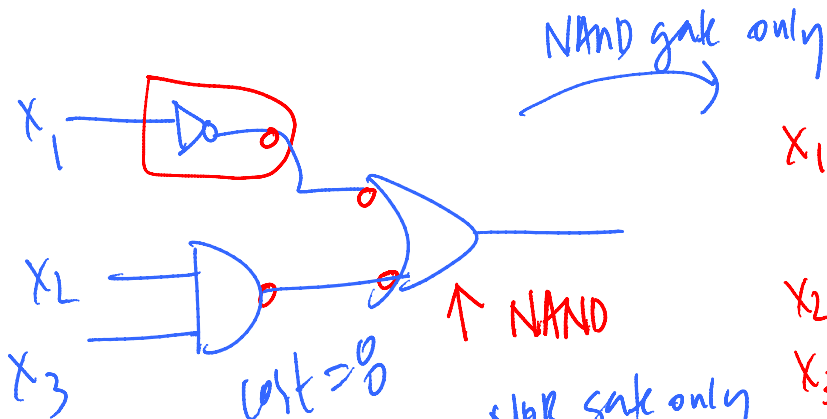
$x_2 x_3 \backslash x_1$	0	1
00	1	0
01	1	0
11	1	1
10	1	0

$f$  in SOP  $\Rightarrow f = \bar{x}_1 + x_2 x_3$

$f$  in POS  $\Rightarrow f = (\bar{x}_1 + x_2)(\bar{x}_1 + x_3)$

$$f \text{ in sop} \Rightarrow f = \bar{X}_1 + X_2 X_3$$

$$f \text{ in pos} \Rightarrow f = (\bar{X}_1 + X_3)(\bar{X}_1 + X_2)$$



problem 4.12 (page 239 of text book)

$$f(x_1, \dots, x_4) = \sum m(0, 2, 4, 6, 7, 9) + D(10, 11)$$

$$g(x_1, \dots, x_4) = \sum m(2, 4, 9, 10, 15) + D(0, 13, 14)$$

$x_1 x_2$		$f$			
$x_3 x_4$	00	01	11	10	
00	0 1	4 1	12 0	8 0	
01	1 0	5 0	13 0	9 1	
11	3 0	7 1	15 0	11 1	
10	2 1	6 1	14 0	10 1	

$$f = \bar{x}_1 \bar{x}_4 + x_1 \bar{x}_2 x_4 + \bar{x}_1 x_2 x_3$$

$$\text{cost} = 15$$

$x_1 x_2$		$g$			
$x_3 x_4$	00	01	11	10	
00	1 1	0 1	0 0	0 0	
01	0 0	0 0	1 1	1 1	
11	0 0	0 0	1 1	0 0	
10	1 1	0 0	1 1	1 1	

$$g = \bar{x}_1 \bar{x}_3 \bar{x}_4 + \bar{x}_2 x_3 \bar{x}_4 + x_1 x_2 x_3 + x_1 \bar{x}_3 x_4$$

$$\text{cost} = 21$$

**f**

$x_1 x_2$	00	01	11	10
$x_3 x_4$	00	1	0	0
01	0	0	0	1
11	0	1	0	d
10	1	0	0	d

$$f = \bar{x}_1 \bar{x}_3 \bar{x}_4 + \bar{x}_2 x_3 \bar{x}_4 + x_1 \bar{x}_2 \bar{x}_3 x_4 + \bar{x}_1 x_2 x_3$$

**g**

$x_1 x_2$	00	01	11	10
$x_3 x_4$	00	d	1	0
01	0	0	d	1
11	0	0	1	0
10	1	0	d	1

$$g = \bar{x}_1 \bar{x}_3 \bar{x}_4 + \bar{x}_2 x_3 \bar{x}_4 + x_1 \bar{x}_2 \bar{x}_3 x_4 + x_1 x_2 x_3$$

