

Quiz 3 – EECS 270, Spring '13

Name: KEY unique name: Key

Honor code:

I have not given or received aid on this quiz, nor have I observed anyone else doing so:

Sign here: KEY

This quiz is graded out of 100 points and is worth about 3% of your class grade. You will have 20 minutes for this quiz. **Closed everything including calculators!** To receive partial credit, work must be shown.

1. Find the minimum sum-of-products of $\sum_{(a,b,c,d)=(0,1,2,3,7,9,11,14)}$ using a K-map. Show your work and clearly circle your answer. [40]

	cd \ ab	00	01	11	10
00		6	4	12	8
01		1	5	13	9
11		3	7	15	11
10		2	6	14	10

(Note: In the original image, the 1s in cells 6, 1, 3, 2, 7, 14, 9, and 11 are circled in red. Red lines also connect cells 6-1-3-2 and 1-5-13-9, and 3-7-15-11.)

$$\bar{a}\bar{b} + \bar{b}d + \bar{a}cd + abcd$$

2. Find the minimum product-of-sums of $\Sigma_{(w,x,y,z)}=(1,2,3,5,8,9,11,15)$ using a K-map. Show your work and clearly circle your answer. [30]

	wx	00	01	11	10
yz	00	0	0	0	0
	01	1	1	0	1
	11	1	0	1	1
	10	1	0	0	0

$$(w + y + z) \cdot (\bar{w} + \bar{x} + y) \cdot (w + \bar{x} + \bar{y}) \cdot (\bar{w} + \bar{y} + z)$$

3. Design a state transition diagram which has one input "X" and one output "Y". The output should go high if one or more of the last two inputs have been a "1", otherwise the output should be zero. [30, 10 points are for finding a minimal solution]

