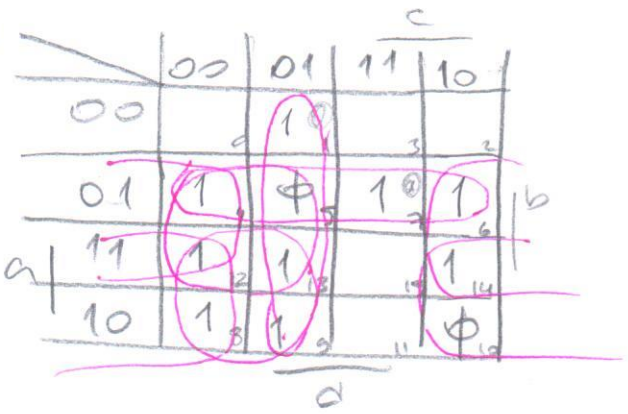
Digital Circuits Assignment 3 / 2013 Güz

(1)



$\bar{c}d$, $b\bar{c}$, $\bar{a}b$, $a\bar{c}$, $a\bar{d}$, $b\bar{d}$

Symbol	Prime Implicant	Covered points	Cost
A	$\bar{c}d$	1, 9, 13	5
B	$b\bar{c}$	4, 12, 13	5
C	$\bar{a}b$	4, 6, 7	5
D	$a\bar{c}$	8, 9, 12, 13	5
E	$a\bar{d}$	8, 12, 14	5
F	$b\bar{d}$	4, 6, 12, 14	5

distinguished points

	1	4	6	7	8	9	12	13	14	Cost
A	X					X		X		5
B		X					X	X		5
C		X	X	X						5
D					X	X	X	X		5
E					X		X		X	5
F		X	X				X		X	5

Step 1:
1 and 7 are distinguished points. So, A and C have to be in the final result. (I mark them and can remove the rows and columns they cover.

	8	12	14	Cost
B		X		5
D	X	X		5
E	X	X	X	5
F		X	X	5

Step 2:
Column 12 covers column 8 and column 14. So, I can remove column 12.
(Buadım olmadan da E direkt seçilebilir!)

	8	14	Cost
D	X		5
E	X	X	5
F		X	5

Step 3
E covers both 8 and 14.
So, E have to be in the final result.

so result with minimum cost = $A + C + E = \bar{c}d + \bar{a}b + a\bar{d}$

$\Rightarrow$ min Cost = $5 + 5 + 5 = 15$

Sonuç : $\bar{a}b + \bar{c}d + a\bar{d}$