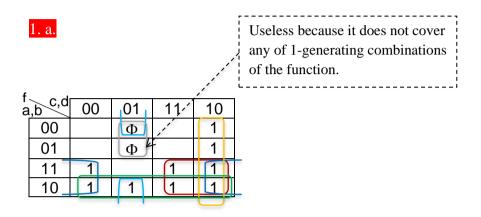
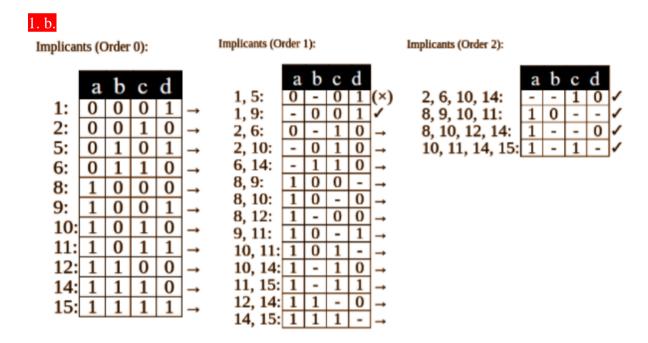


## BLG 231E - Digital Circuits Assignment 3 Solution Key



set of <u>all prime implicants</u> in <u>SOP</u> form: ac + cd' + ab' + ad' + b'c'd



set of all prime implicants in SOP form = ac + cd' + ab' + ad' + b'c'd



## 2.

## Prime Implicant Chart:

		2	6	8	9	10	11	12	14	15	COST
2,6,10,14	cd'	Х	Χ			Χ			Χ		5
8,9,10,11	ab'			Х	Х	Χ	Χ				5
8,10,12,14	ad'			Χ		Χ		Χ	Χ		5
10,11,14,15	ac					Χ	Χ		Χ	Χ	4
1,9	b'c'd				Χ						8

		2	2	(	;	8	9	1	0	1	1	12	1	4	1	5	COST
 2,6,10,14	cd'				,				$\leftarrow$								C)
8,9,10,11	ab'			П		Χ	Χ		(	)	(						5
8,10,12,14	ad'					Χ			(			Χ		(			5
 10,11,14,15	ac								Ć	1	$\leftarrow$						4
1,9	b'c'd						Χ										8

Extracted essential prime implicants: cd', ac

		E	~	9	1	2	COST
8,9,10,11	ab'		(	Χ			5
 8,10,12,14	ad'						ιD
1,9	b'c'd			Χ			8

Extracted essential prime implicant: ad'

				,
				Select the one with
		9	COST	the lower cost
 8,9,10,11	ab'	Х	5	£
1,9	b'c'd	Х	8	

Extracted essential prime implicants: ab'

expression for the function with the lowest cost: ac + cd' + ab' + ad'

total cost: 19