Truth table for 7-segment display

H_0	H_1	H_2	H_3	a	b	c	d	e	f	g
0	1	0	1	0	0	0	1	0	0	0
1	1	0	1	1	1	0	0	0	0	0
0	0	1	1	0	1	1	0	0	0	1
1	0	1	1	1	0	0	0	0	1	0
0	1	1	1	0	1	1	0	0	0	0
1	1	1	1	0	1	1	1	0	0	0

Approaching with POS

For a k-map

H_0H_1 \ H_2H_3	00	01	11	10
00	X	X	0	X
01	X	0	0	X
11	X	1	0	X
10	X	X	1	X

$a = H_0(\bar{H}_1 + \bar{H}_2)$

For b k-map

H_0H_1 \ H_2H_3	00	01	11	10
00	X	X	1	X
01	X	0	1	X
11	X	1	1	X
10	X	X	0	X

$b = (H_0 + H_2)(\bar{H}_0 + H_1)$

For c k-map

H_0H_1 \ H_2H_3	00	01	11	10
00	X	X	1	X
01	X	0	1	X
11	X	0	1	X
10	X	X	0	X

$c = H_2(\bar{H}_0 + H_1)$

Date : ___ / ___ / _____

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For d k-map

H_0H_1 \ H_2H_3	00	01	11	10
00	X	X	0	X
01	X	1	0	X
11	X	0	1	X
10	X	X	0	X

$d = (H_0 + \bar{H}_2)(\bar{H}_0 + H_2)(\bar{H}_0 + H_1)$

For e k-map : As all values are either 0 or X ignore it.

For f k-map

H_0H_1 \ H_2H_3	00	01	11	10
00	X	X	0	X
01	X	0	0	X
11	X	0	0	X
10	X	X	1	X

$f = H_0\bar{H}_1$

For g k-map

H_0H_1 \ H_2H_3	00	01	11	10
00	X	X	1	X
01	X	0	0	X
11	X	0	0	X
10	X	X	0	X

$g = \bar{H}_0\bar{H}_1$