

H18 ② 論理回路 (必須)

(1-1)

$x_3x_2x_1x_0$	a	b	c	d	e	f	g
0000	1	1	1	0	1	1	1
0001	0	0	1	0	0	1	0
0010	1	0	1	1	1	0	1
0011	1	0	1	1	0	1	1
0100	0	1	1	1	0	1	0
0101	1	1	0	1	0	1	1
0110	1	1	0	1	1	1	1
0111	1	1	1	0	0	1	0
1000	1	1	1	1	1	1	1
1001	1	1	1	1	0	1	1

(1-2)

(b)

	x_1x_0	00	01	11	10
x_3x_2	00	1	0	0	0
	01	1	1	1	1
	11	d	d	d	d
	10	1	1	d	d

$$b = x_2 \vee x_3 \vee \bar{x}_1 \bar{x}_0$$

(c)

	x_1x_0	00	01	11	10
x_3x_2	00	1	1	1	1
	01	1	0	1	0
	11	d	d	d	d
	10	1	1	d	d

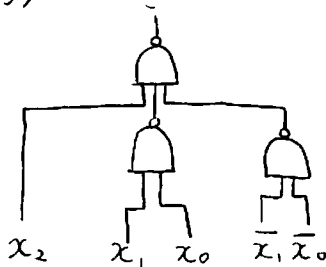
$$c = \bar{x}_2 \vee x_1x_0 \vee \bar{x}_1\bar{x}_0$$

(g)

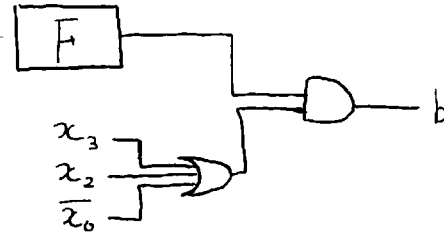
	x_1x_0	00	01	11	10
x_3x_2	00	1	0	1	1
	01	0	1	0	1
	11	d	d	d	d
	10	1	1	d	d

$$g = x_3 \vee x_1\bar{x}_0 \vee x_1\bar{x}_2 \vee \bar{x}_1\bar{x}_0\bar{x}_2 \vee x_2\bar{x}_1x_0$$

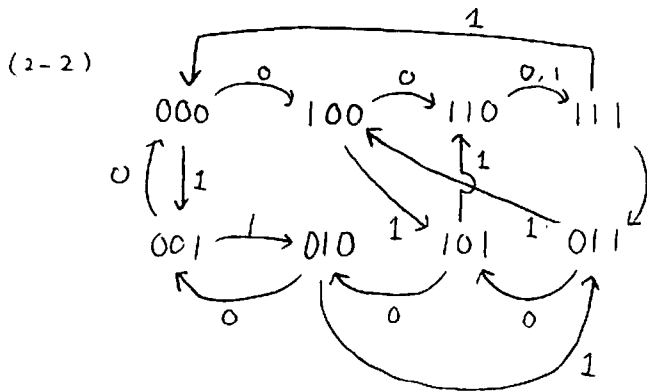
(1-3)



(1-4)



(2-1) 000 → 100 → 110 → 111 → 011 → 101 → 010 → 001 → 000 の周期8



(2-3)

$d_2d_1d_0$	$x=0$	$x=1$
000	100	001
001	000	010
011	101	100
010	001	011
110	111	111
111	011	000
101	010	110
100	001	101

(d2)

	g_0x	00	01	11	10
g_2g_1	00	1	0	0	0
	01	0	0	1	1
	11	1	1	0	0
	10	0	1	1	0

$$d_2 = g_2g_1\bar{g}_0 \vee \bar{g}_2g_1g_0 \vee g_2\bar{g}_1x \vee \bar{g}_2\bar{g}_1\bar{g}_0\bar{x}$$

(d1)

	g_0x	00	01	11	10
g_2g_1	00	0	0	1	0
	01	0	1	0	0
	11	1	1	0	1
	10	0	0	1	1

$$d_1 = g_2g_1\bar{g}_0 \vee g_1\bar{g}_0x \vee g_2\bar{g}_1g_0 \vee g_2g_0\bar{x} \vee \bar{g}_2\bar{g}_1g_0x$$

(d0)

	g_0x	00	01	11	10
g_2g_1	00	0	1	0	0
	01	1	1	0	1
	11	1	1	0	1
	10	1	1	0	0

$$d_0 = \bar{g}_0x \vee g_1\bar{x} \vee g_2x$$