

専門科目 (Special subjects)

(33枚中の31)

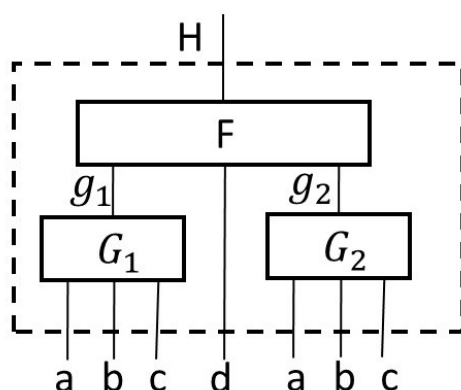
6分野から2分野を選び解答すること。選んだ分野毎に解答用紙1部を用いよ。また、大問一つあたり一枚の解答用紙を用いよ。

Select 2 fields out of the 6 fields and answer the questions. Use a set of answer sheets for each of the fields you selected and use a separate answer sheet for each question.

Answer the following questions (【Q1】～【Q3】).

【Q1】 Let $H(a, b, c, d)$ be a logic function whose truth table is shown below. Consider that H is composed of other subfunctions $G_1(a, b, c)$, $G_2(a, b, c)$ and $F(d, g_1, g_2)$ as shown in the figure below. Inputs of F , g_1 and g_2 , are connected to the output of G_1 and G_2 , respectively. When the truth table for G_1 is given below, show the truth tables of F and G_2 .

Truth table of $H(a, b, c, d)$					Truth table of $G_1(a, b, c)$								
a	b	c	d	H	a	b	c	d	H	a	b	c	G_1
0	0	0	0	0	1	0	0	0	1	0	0	0	0
0	0	0	1	0	1	0	0	1	1	0	0	1	1
0	0	1	0	0	1	0	1	0	1	0	1	0	1
0	0	1	1	1	1	0	1	1	1	0	1	1	1
0	1	0	0	0	1	1	0	0	1	1	0	0	0
0	1	0	1	1	1	1	0	1	0	1	0	1	0
0	1	1	0	1	1	1	1	0	0	1	1	0	1
0	1	1	1	0	1	1	1	1	1	1	1	1	1



The structure of function H

③ 假设这里为 0
可以推出后面
的组合

① 假设这里为 0

② 可以推出这里不能为 0, 即为 1

a	b	c	g_1	g_2	Hd	Hd
0	0	0	0	0	0	0
0	0	1	1	0	0	1
0	1	0	1	0	0	1
0	1	1	1	1	1	0
1	0	0	0	1	1	1
1	0	1	0	1	1	1
1	1	0	1	1	1	0
1	1	1	1	0	0	1

d	g_1	g_2	F
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

a	b	c	g_2
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

注：这题结果不唯一