

(1)

① Truth Table

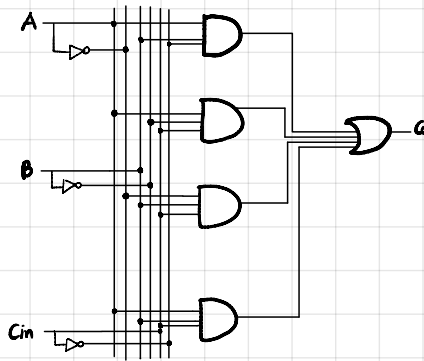
A	B	Cin	S	Co
0	0	0	0	0
1	0	0	1	0
0	1	0	1	0
1	1	0	0	1
0	0	1	1	0
1	0	1	0	1
0	1	1	0	1
1	1	1	1	1

② Express  $C_o$  as SOP canonical

$$C_o = AB(Cin)' + AB'(Cin) + A'B(Cin) + AB(Cin)$$

③ Express  $S$  as POS canonical

$$S = \{A+B+(Cin)\} \{A'+B'+(Cin)\} \{A'+B+(Cin)'\} \{A+B'+(Cin)'\}$$

④ Obtain Digital Circuit of  $C_o$ 

(2)

① Truth Table

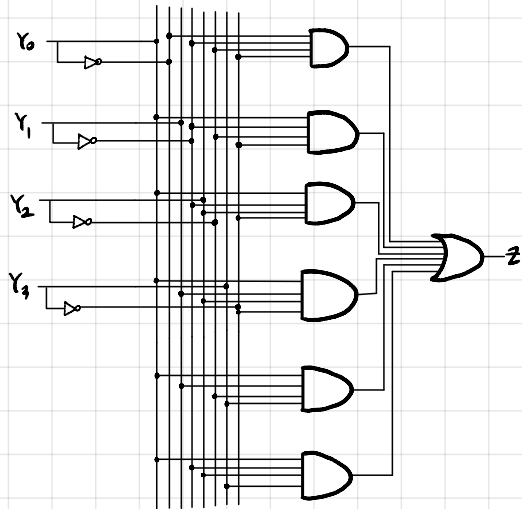
각 input에 따른  $Y_0, Y_1, Y_2, Y_3$ 의 Truth Table은 아래와 같다.

I	$Y_0$	$Y_1$	$Y_2$	$Y_3$	Z
0	0	0	0	0	1
1	1	0	0	0	1
2	0	1	0	0	0
3	1	1	0	0	0
4	0	0	1	0	0
5	1	0	1	0	1
6	0	1	0	0	0
7	1	1	1	0	1
8	0	0	0	1	0
9	1	0	0	1	0
10	0	1	0	1	0
11	1	1	0	1	1
12	0	0	1	1	0
13	1	0	1	1	1
14	0	1	1	1	0
15	1	1	1	1	0

② Obtain Boolean Expression of Z as SOP

$$Z = Y_0'Y_1'Y_2'Y_3' + Y_0Y_1'Y_2'Y_3' + Y_0Y_1Y_2Y_3' + Y_0Y_1Y_2'Y_3 + Y_0Y_1Y_2Y_3$$

③ Obtain Digital Circuit of Z



(3)

$$\begin{array}{r}
 0111 \\
 - 0101 \\
 \hline
 \end{array}
 \rightarrow \begin{array}{r}
 0111 \\
 + 1011 \\
 \hline
 10010
 \end{array}
 \begin{array}{l}
 \rightarrow 7_{(10)} \\
 \rightarrow -5_{(10)} \\
 \times 10010 \rightarrow 2_{(10)}
 \end{array}$$

