

Group - 1

S_2	S_1	S_0	F	X	Y	Z
0	0	0	$A+1$	A	0	1
0	0	1	$A-B$	A	\bar{B}	1
0	1	0	$A+B$	A	B	0
0	1	1	$A-1$	A	1111	0
1	0	0	$A \text{ or } B$	$A+B$	0	X
1	0	1	$A \cdot B$	$A+\bar{B}$	\bar{B}	X
1	1	0	$A \oplus B$	$A+\bar{B}$	B	X
1	1	1	\bar{A}	A A	1111	X

$$\Rightarrow A - B = A + \bar{B} + 1$$

$$A - 1 = A + 1111$$

$$A + 2 =$$

$$\begin{array}{r}
 -1 = 0001 \\
 1110 \\
 +1 \\
 \hline
 1111
 \end{array}$$

$$X_i = A_i$$

$$Y_i = \bar{S}_1 S_0 \bar{B} + S_1 \bar{S}_0 B + S_1 S_0$$

$$= \bar{S}_1 S_0 \bar{B} + S_1 \bar{S}_0 B + S_1 S_0 (B + \bar{B})$$

$$= \bar{S}_1 S_0 \bar{B} + S_1 \bar{S}_0 B + S_1 S_0 B + S_1 S_0 \bar{B}$$

$$= \bar{S}_1 S_0 \bar{B} + S_1 S_0 \bar{B} + S_1 \bar{S}_0 B + S_1 S_0 B$$

$$= S_0 \bar{B} (\bar{S}_1 + S_1) + S_1 B (\bar{S}_0 + S_0)$$

$$= S_0 \bar{B} + S_1 B$$

$$\therefore Y_i = \bar{S}_1 \bar{B} + S_0 B$$

$$Z = \bar{S}_2 \bar{S}_1 \bar{S}_0 + \bar{S}_2 \bar{S}_1 S_0$$

$$= \bar{S}_2 \bar{S}_1 (\bar{S}_0 + S_0)$$

$$= \bar{S}_2 \bar{S}_1$$

logical

$$X \oplus Y \oplus Z = X \oplus Y = A.B$$

$$X \oplus Y = X \oplus \bar{B} = A.B$$

$$X = (A+K)$$

$$X \oplus Y = (A+K) \oplus \bar{B}$$

$$= (A+K).B + (\overline{A+K}).\bar{B}$$

$$= AB + KB + \bar{A}.\bar{K}.\bar{B}$$

$$= AB + KB + \bar{A}\bar{K}\bar{B}$$

if, $K = \bar{B}$

so, $AB + \bar{B}B + \bar{A}\bar{B}B$

$$X \oplus Y = AB$$

so, $X = (A+K)$
 $= A + \bar{B}$

$$X_i = A_i + B S_2 \bar{S}_1 \bar{S}_0 + \bar{B} S_2 \bar{S}_1 S_0$$

$$\cancel{= A_i + \bar{S}_2 S}$$

$$= A_i + S_2 \bar{S}_1 (B \bar{S}_0 + \bar{B} S_0)$$

$$= A_i + S_2 \bar{S}_1 (S_0 \oplus B)$$

$$Y_1 = \overline{S_1} \overline{B} + S_0 B$$

$$Z = \overline{S_2} \overline{S_1}$$