

37

$AB \backslash CD$	$\bar{C}\bar{D}$	$\bar{C}D$	CD	$C\bar{D}$
$\bar{A}\bar{B}$	X	0	0	X
$\bar{A}B$	0	1	1	0
AB	0	1	1	X
$A\bar{B}$	1	0	0	1

$$\begin{aligned}
 G_1 &= \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}C\bar{D} \\
 &= \bar{A}\bar{B}\bar{D} \quad (1) \\
 &= \bar{A}\bar{B}\bar{D}
 \end{aligned}$$

$$\begin{aligned}
 G_2 &= \bar{A}B\bar{C}D + A\bar{B}\bar{C}D + \bar{A}BCD + AB\bar{C} \\
 &= ABD(\bar{C} + C) + ABD(C + \bar{C}) \\
 &= BD(\bar{A} + A) \\
 &= BD
 \end{aligned}$$

$$\begin{aligned}
 G_3 &= A\bar{B}\bar{C}D + A\bar{B}C\bar{D} \\
 &= A\bar{B}\bar{D}(\bar{C} + C) \\
 &= A\bar{B}\bar{D}
 \end{aligned}$$

$$\begin{aligned}
 X &= \bar{A}\bar{B}\bar{D} + BD + A\bar{B}\bar{D} \\
 &= \bar{B}\bar{D}(A + \bar{A}) + BD
 \end{aligned}$$

~~$$X = \bar{B}\bar{D} + BD$$~~

$$X = \bar{B}\bar{D} + BD$$