

X_1	X_0	Y_1	Y_0	LT	EQ	GT
0	0	0	0	0	1	0
0	0	0	1	1	0	0
0	0	1	0	1	0	0
0	0	1	1	1	0	0
0	1	0	0	0	0	1
0	1	0	1	0	1	0
0	1	1	0	1	0	0
0	1	1	1	1	0	0
1	0	0	0	0	0	1
1	0	0	1	0	0	1
1	0	1	0	0	1	0
1	0	1	1	1	0	0
1	1	0	0	0	0	1
1	1	0	1	0	0	1
1	1	1	0	0	0	1
1	1	1	1	0	1	0

$$LT = m_1 + m_2 + m_3 + m_6 + m_7 + m_{11}$$

$$EQ = m_0 + m_5 + m_{10} + m_{15}$$

$$GT = m_4 + m_8 + m_9 + m_{12} + m_{13} + m_{14}$$

K-MAP of LT:

$X_1 X_0$		Y_1'		Y_1	
		00	01	11	10
X_0'	00	0	1	1	1
	01	0	0	1	1
X_0	11	0	0	0	0
	10	0	0	1	0
		Y_0'		Y_0	

$$LT = X_1' Y_1 + X_1' X_0' Y_0 + X_0' Y_1 Y_0$$

K-MAP of EQ:

$X_1 X_0$		$Y_1 Y_0$			
		00	01	11	10
00	00	1	0	0	0
01	01	0	1	0	0
11	11	0	0	1	0
10	10	0	0	0	1

$$EQ = X_1' X_0' Y_1' Y_0' + X_1' X_0 Y_1' Y_0$$

$$+ X_1 X_0 Y_1 Y_0 + X_1 X_0' Y_1 Y_0'$$

OR

$$EQ = (LT + GT)' = LT' GT'$$

K-MAP of GT;

$x_1 x_0$		$y_2 y_0$		y_1	
		y_1'	y_1	y_0'	y_0
x_1'	00	0	0	0	0
	01	1	0	0	0
x_1	11	1	1	0	1
	10	1	1	0	0

$$GT = x_1 y_1' + x_2 x_0 y_0' + x_0 y_1' y_0'$$

