SISTEMAS DIGITALES I
SDU115

UNIDAD III

CIRCUITOS COMBINACIONALES DE MEDIANA ESCALA DE INTEGRACIÓN -MSI

SISTEMAS DIGITALES I
SDU115

Ejemplos de Análisis de Circuitos

Objetivos de Unidad

Implementar sistemas digitales combinacionales, de mediana complejidad utilizando bloques lógicos funcionales de mediana escala de integración (MSI).

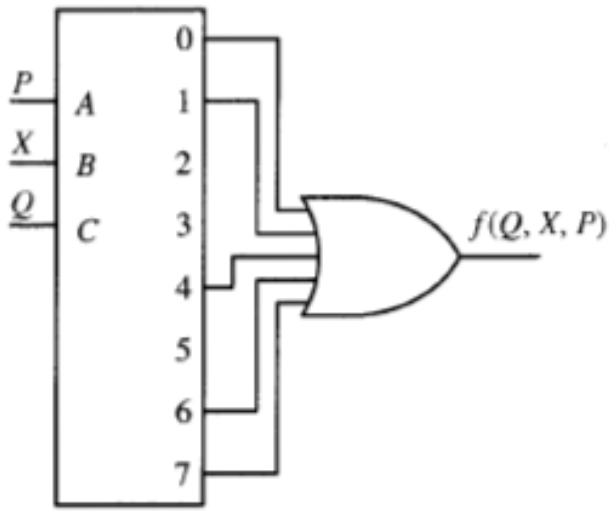
Agenda

- Analizar sistemas digitales que contengan circuitos integrados MSI.

OBJETIVO

Analizar sistemas digitales construidos con circuitos MSI, presentando su tabla de verdad, y después obteniendo, por cualquiera de los métodos, la expresión lógica simplificada.

Obtenga Tabla de verdad y ecuación lógica



	Q	X	P	F
0	0	0	0	1
1	0	0	1	1
2	0	1	0	0
3	0	1	1	0
4	1	0	0	1
5	1	0	1	0
6	1	1	0	1
7	1	1	1	1

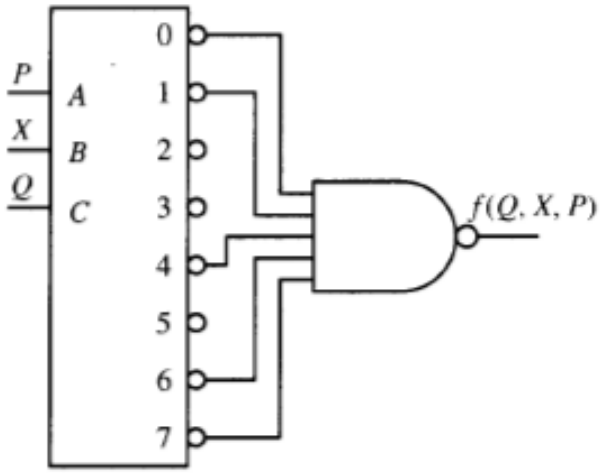
$$F = m0 + m1 + m4 + m6 + m7$$

$$F = \sum m\,(0,1,4,6,7)$$

$$F = \bar{Q}\bar{X}\bar{P} + \bar{Q}\bar{X}P + Q\bar{X}\bar{P} + QX\bar{P} + QXP$$

$$F = \bar{X}\bar{P} + \bar{Q}\bar{X} + QX$$

Obtenga Tabla de verdad y ecuación lógica



	Q	X	P	F
0	0	0	0	1
1	0	0	1	1
2	0	1	0	0
3	0	1	1	0
4	1	0	0	1
5	1	0	1	0
6	1	1	0	1
7	1	1	1	1

$$F = \overline{M0 \,.\, M1 \,.\, M4 \,.\, M6 \,.\, M7}$$

$$F = \overline{M0} + \overline{M1} + \overline{M4} + \overline{M6} + \overline{M7}$$

$$F = m0 + m1 + m4 + m6 + m7$$

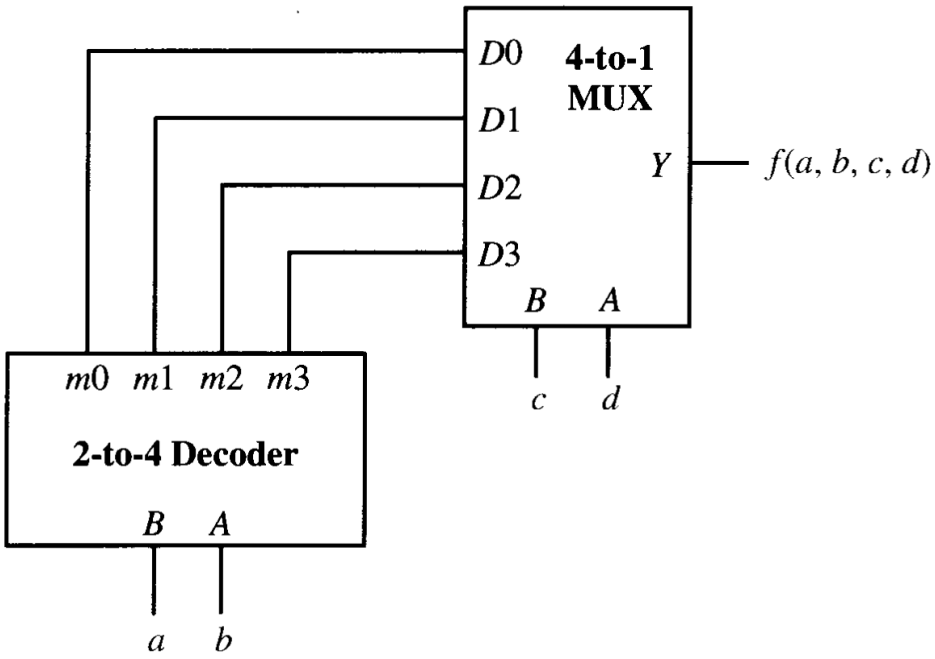
$$F = \bar{Q}\bar{X}\bar{P} + \bar{Q}\bar{X}P + Q\bar{X}\bar{P} + QX\bar{P} + QXP$$

$$F = \bar{X}\bar{P} + \bar{Q}\bar{X} + QX$$

$$F = \sum m\,(0,1,4,6,7)$$

$$M = \bar{m} \;;\quad m = \bar{M}$$

Obtenga Tabla de verdad y ecuación lógica

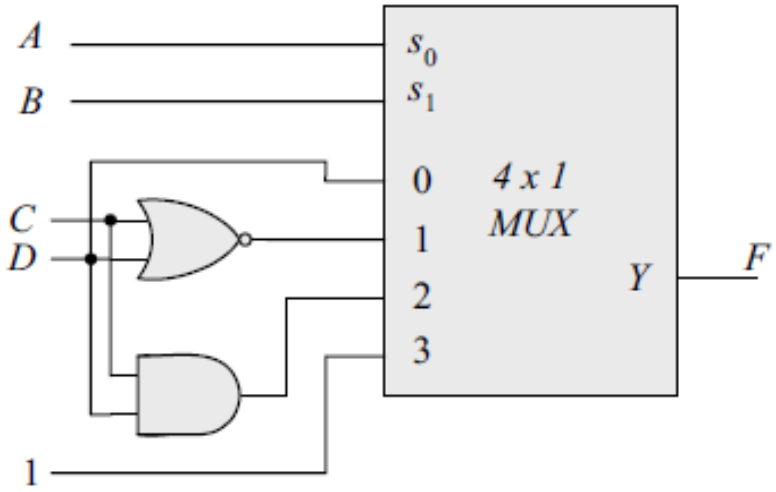


$$F = \sum m\,(0,5,10,15)$$

	a	b	c	d	f	
0	0	0	0	0	1	D0
1	0	0	0	1	0	D1
2	0	0	1	0	0	D2
3	0	0	1	1	0	D3
4	0	1	0	0	0	D0
5	0	1	0	1	1	D1
6	0	1	1	0	0	D2
7	0	1	1	1	0	D3
8	1	0	0	0	0	D0
9	1	0	0	1	0	D1
10	1	0	1	0	1	D2
11	1	0	1	1	0	D3
12	1	1	0	0	0	D0
13	1	1	0	1	0	D1
14	1	1	1	0	0	D2
15	1	1	1	1	1	D3

Obtenga Tabla de verdad y ecuación lógica

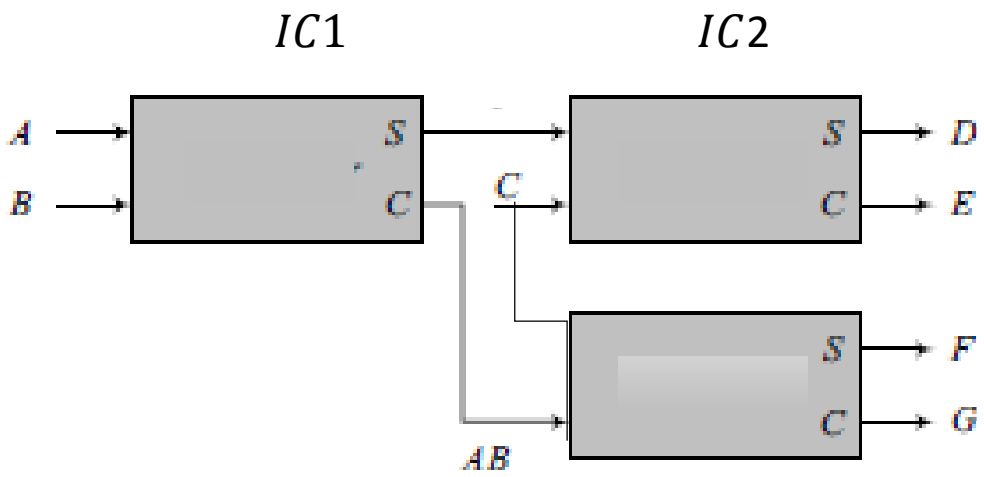
		A	B	C	D	F
0	0	0	0	0	0	0
	1	0	0	0	1	1
	2	0	0	1	0	0
	3	0	0	1	1	1
1	4	0	1	0	0	1
	5	0	1	0	1	0
	6	0	1	1	0	0
	7	0	1	1	1	0
2	8	1	0	0	0	0
	9	1	0	0	1	0
	10	1	0	1	0	0
	11	1	0	1	1	1
3	12	1	1	0	0	1
	13	1	1	0	1	1
	14	1	1	1	0	1
	15	1	1	1	1	1



$$F = \sum m\,(1, 3, 4, 11\ -\ 15)$$

$$F = AB + B\bar{C}\bar{D} + \bar{A}\bar{B}D + ACD$$

Obtenga Tabla de verdad y ecuación lógica



$IC1$

$S = A \oplus B$

$C = AB$

$IC2$

$S = A \oplus B \oplus C$

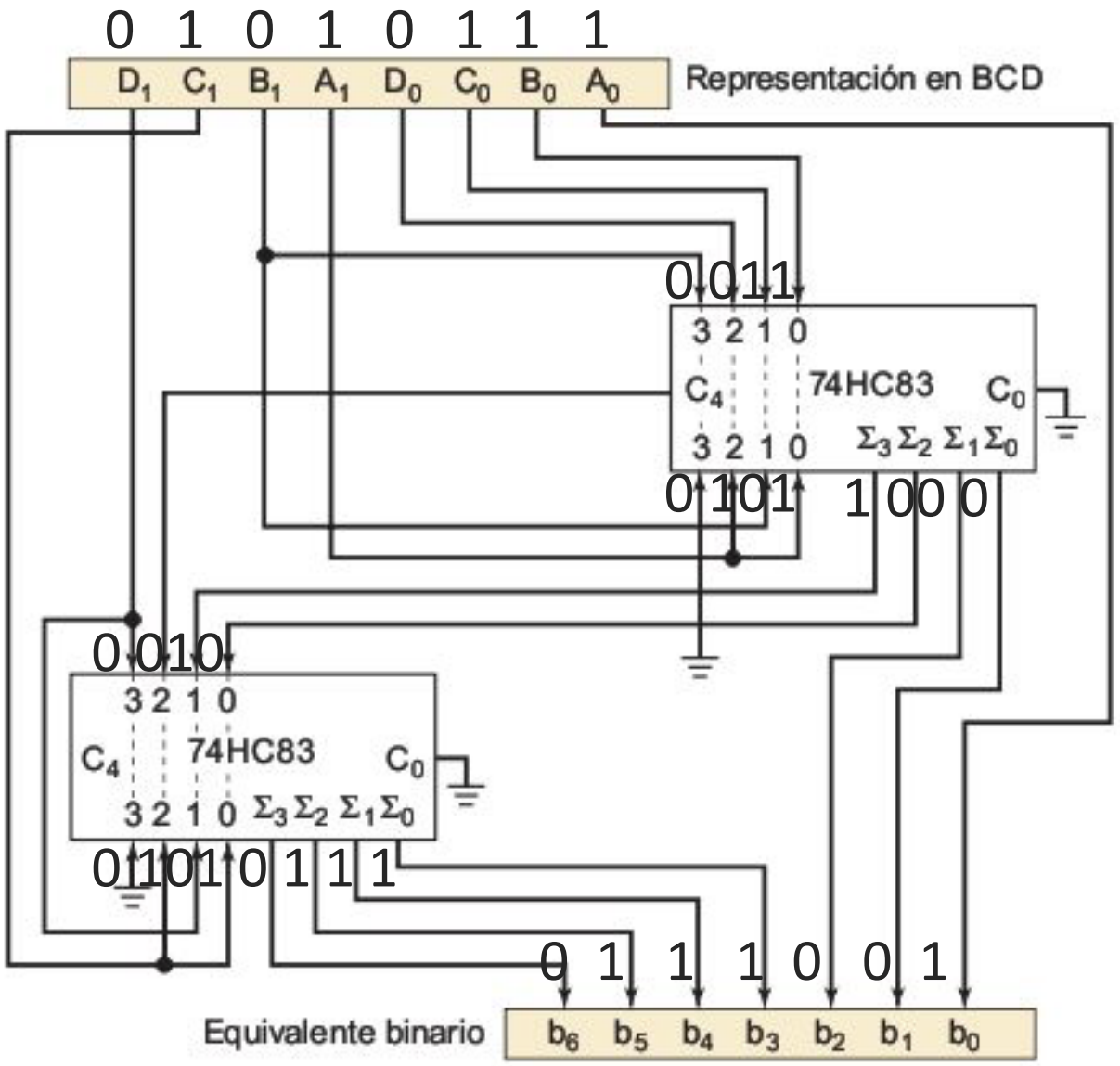
$C = (A \oplus B)C$

$IC3$

$S = (AB) \oplus C$

$C = ABC$

Circuito convertidor de 8421 a binario



HASTA LA PROXIMA