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Problem 7 (ECE-218)

5.19)

b)

PS	NS		J_2	K_2	J_1	K_1	J_0	K_0	Y_{out}	
A B C	$x=0$	$z=1$	0 1	0 1	0 1	0 1	0 1	0 1	0 1	
a 0 0 0	d	e	0 1	x x	1 0	x x	1 0	x x	0 1	
b 0 0 1	b	e	0 1	x x	0 0	x x	x x	0 1	0 1	
c 0 1 0	c	a	0 0	x x	x x	0 1	0 0	x x	0 1	
d 0 1 1	b	c	0 0	x x	x x	1 0	x x	0 1	0 1	
e 1 0 0	c	d	x x	1 1	1 1	x x	0 1	x x	0 0	
f 1 0 1	x x	x x	x x	x x	x x	x x	x x	x x	x x	
g 1 1 0	x x	x x	x x	x x	x x	x x	x x	x x	x x	
h 1 1 1	x x	x x	x x	x x	x x	x x	x x	x x	x x	

Cx	00	01	11	10
AB	00	01	11	10
00	0 ₀	1 ₁	1 ₂	0 ₂
01	0 ₄	0 ₅	0 ₇	0 ₆
11	x ₁₂	x ₁₃	x ₁₅	x ₁₄
10	x ₈	x ₉	x ₁₁	x ₁₀

$$J_2 = B'z$$

$B'z$

Cx	00	01	11	10
AB	00	01	11	10
00	x ₀	x ₁	x ₃	x ₂
01	x ₄	x ₅	x ₇	x ₆
11	x ₁₂	x ₁₃	x ₁₅	x ₁₄
10	x ₈	x ₉	x ₁₁	x ₁₀

$$K_2 = 1$$

Cz	00	01	11	10
AB	00	01	11	10
00	1	0	0	0
01	x	x	x	x
11	x	x	x	x
10	1	x	x	x

$$J_1 = A + C'x'$$

Cz	00	01	11	10
AB	00	01	11	10
00	x	x	x	x
01	0	1	0	1
11	x	x	x	x
10	x	x	x	x

$$K_1 = C'z' + Cz$$

Cz	00	01	11	10
AB	00	01	11	10
00	1	0	x	x
01	0	0	x	x
11	x	x	x	x
10	0	1	x	x

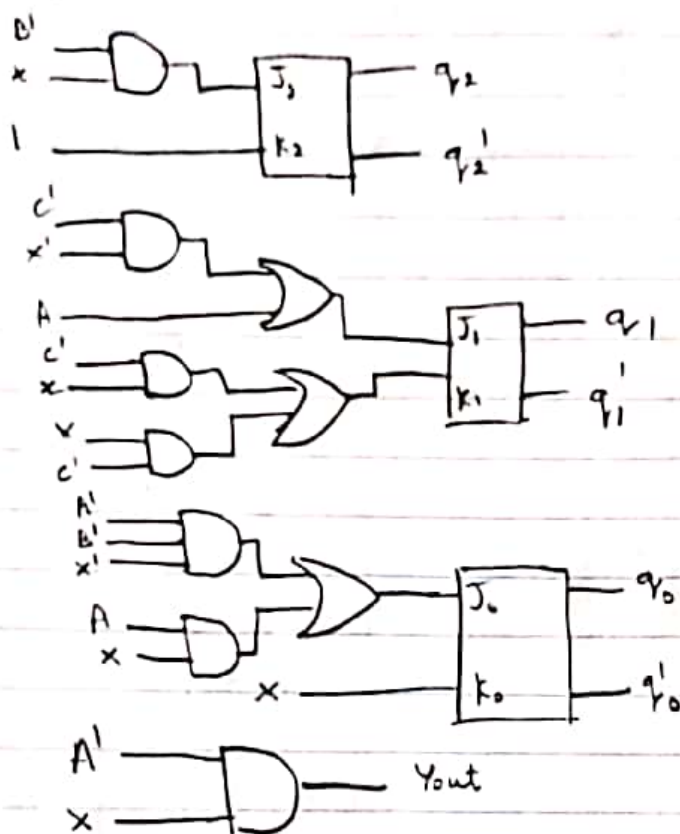
$$J_0 = Az + AB'z'$$

Cz	00	01	11	10
AB	00	01	11	10
00	x	x	1	0
01	x	x	1	0
11	x	x	x	x
10	x	x	x	x

$$K_0 = x$$

C_A AB	00	01	11	10
00	0	1	1	0
01	0	1	1	0
11	x	x	x	x
10	0	0	x	x

$$y_{out} = A' x$$



PS		NS		T ₂	T ₁	T ₀	Y _{out}
A	B C	$z=0$	$z=1$	0 1	0 1	0 1	0 1
a	0 0 0	d	e	0 1	1 0	1 0	0 1
b	0 0 1	b	e	0 1	0 0	0 1	0 1
c	0 1 0	c	a	0 0	0 1	0 0	0 1
d	0 1 1	b	c	0 0	1 0	0 1	0 1
e	1 0 0	c	d	1 1	1 1	0 1	0 0
f	1 0 1	x	x	x x	x x	x x	x x
g	1 1 0	x	x	x x	x x	x x	x x
h	1 1 1	x	x	x x	x x	x x	x x

AB \ Cx	00	01	11	10
00	1	0	1	0
01	0	0	1	0
11	x	x	x	x
10	0	1	x	x

$$T_0 = Ax + Cx$$

AB \ Cx	00	01	11	10
00	0	1	1	0
01	0	1	1	1
11	x	x	x	x
10	0	0	x	1

$$Y_{out} = A' + x$$

AB \ Cx	00	01	11	10
00	0	1	1	0
01	0	0	0	0
11	x	x	x	x
10	0	1	x	x

$$T_2 = A'B' + x$$

AB \ Cx	00	01	11	10
00	1	0	0	0
01	0	1	0	1
11	x	x	x	x
10	1	1	x	x

$$T_1 = AC' + BC' + BCx'$$

