

## Solución Examen Febrero 2015

### EJERCICIO 1

a)

- i) A= 52 B= 149
- ii) A= 52 B= -21
- iii) A= 52 B= -107
- iv) A= 34 B= 95

b)

- i) A – B = 10011111 Overflow
- ii) A+B = 00011111

### EJERCICIO 2

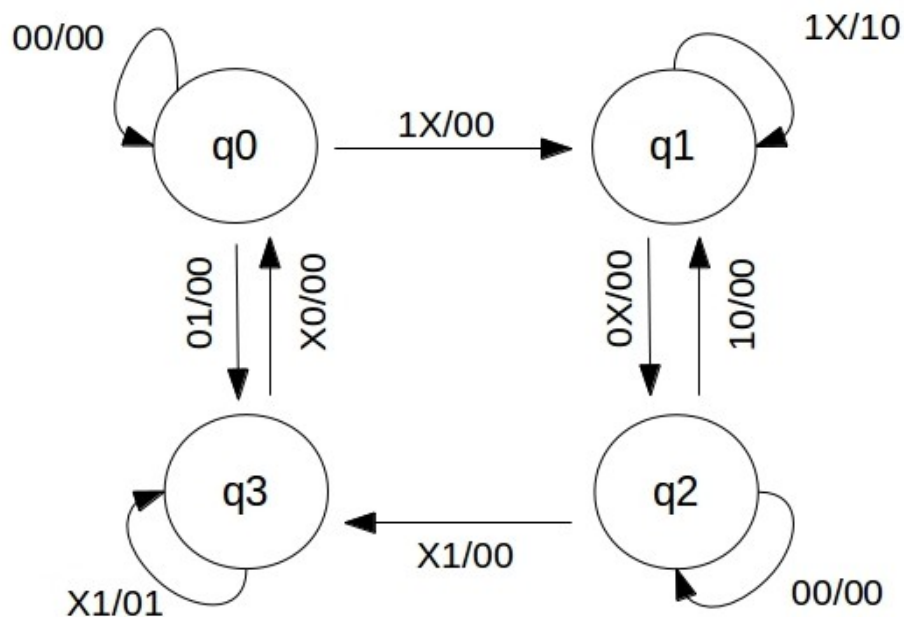
Codificación: c = 00, a = 01, b = 10, d = 11

	00	01	11	10	00	01	11	10
a	<b>a</b>	c	<b>a</b>	d	<b>0</b>	0	<b>0</b>	x
b	<b>c</b>	<b>b</b>	<b>b</b>	c	x	<b>1</b>	<b>0</b>	x
c	a	<b>c</b>	b	<b>c</b>	0	<b>0</b>	0	<b>1</b>
d	<b>d</b>	<b>a</b>	a	<b>d</b>	<b>1</b>	x	x	<b>1</b>

### PROBLEMA 1

#### Diagrama de estados

**S1 S2 / P1 P2**



### Tabla de Estados

	00	01	11	10	00	01	11	10
q0	q0	q3	q1	q1	00	00	00	00
q1	q2	q2	q1	q1	00	00	10	10
q2	q2	q3	q3	q1	00	00	00	00
q3	q0	q3	q3	q0	00	01	01	00

### Minimización de Estados

q1	X		
q2	1-3	X	
q3	X	X	X
	q0	q1	q2

Es mínimo.

### Codificación de Estados

	00	01	11	10	00	01	11	10
00 - q0	00	10	01	01	00	00	00	00
01 - q1	11	11	01	01	00	00	10	10
11 - q2	11	10	10	01	00	00	00	00
10 - q3	00	10	10	00	00	01	01	00

### Minimización – Mapas K

Q1Q0/S1S2	00	01	11	10
00	0	1	0	0
01	1	1	0	0
11	1	1	1	0
10	0	1	1	0

$$D1 = !S1.Q0 + Q1.S2 + !S1.S2$$

Q1Q0/S1S2	00	01	11	10
00	0	0	1	1
01	1	1	1	1
11	1	0	0	1
10	0	0	0	0

$$D0 = !Q1.Q0 + Q0.!S2 + S1.!Q1$$

<b>Q1Q0/S1S2</b>	<b>00</b>	<b>01</b>	<b>11</b>	<b>10</b>
<b>00</b>	0	0	0	0
<b>01</b>	0	0	1	1
<b>11</b>	0	0	0	0
<b>10</b>	0	0	0	0

$$P1 = !Q1.Q0.S1$$

<b>Q1Q0/S1S2</b>	<b>00</b>	<b>01</b>	<b>11</b>	<b>10</b>
<b>00</b>	0	0	0	0
<b>01</b>	0	0	0	0
<b>11</b>	0	0	0	0
<b>10</b>	0	1	1	0

$$P2 = Q1.!Q0.S2$$

## PROBLEMA 2

### SECUENCIA

**MODULE:** examen feb/2015

**INPUTS:** T , Stop

**OUTPUTS:** Stim[2]

**MEMORY:** Cont\_4[2]; N[8], Cont\_T[3], Cont\_N[8]

1. Cont\_T[ ]  $\leftarrow$  000  
 $\rightarrow$  (T , !T) / (1,2)
2. Cont\_T[ ]  $\leftarrow$  INC(Cont\_T[ ])  
Cont\_N[ ]  $\leftarrow$  00000001  
Cont\_4[ ]  $\leftarrow$  00  
N[ ]  $\leftarrow$  T , N[7..1]  
 $\rightarrow$  (Cont\_T<>111 , Cont\_T=111) / (2,3)
3. Stim = ! stop . Sec [1..0]  
Cont\_4[ ]  $\leftarrow$  INC(Cont\_4[ ])  
Cont\_N[ ] \* (Cont\_4[ ] = 11)  $\leftarrow$  INC(Cont\_N[ ] ) . (Cont\_N[ ] <> N[ ] ) + 00000001 .  
(Cont\_N[ ] = N[ ] )  
 $\rightarrow$  (!T , T . stop , T . !stop . !(Cont\_N[ ] =N[ ] .Cont\_4[ ] = 11 ) ,  
T . ! stop . (Cont\_N[ ] = N[ ] .Cont\_4[ ] = 11 ))/(2,1,3,4)
4. Stim = ! stop . 11  
Cont\_N[ ]  $\leftarrow$  INC(Cont\_N[ ] ) . (Cont\_N[ ] <> N[ ] ) + 00000001 + (Cont\_N[ ] = N[ ] )  
 $\rightarrow$  (!T , T . stop , T . !stop . (Cont\_N[ ] <>N[ ] ) , T . ! stop . (Cont\_N[ ] = N[ ] ))/(2,1,4,3)

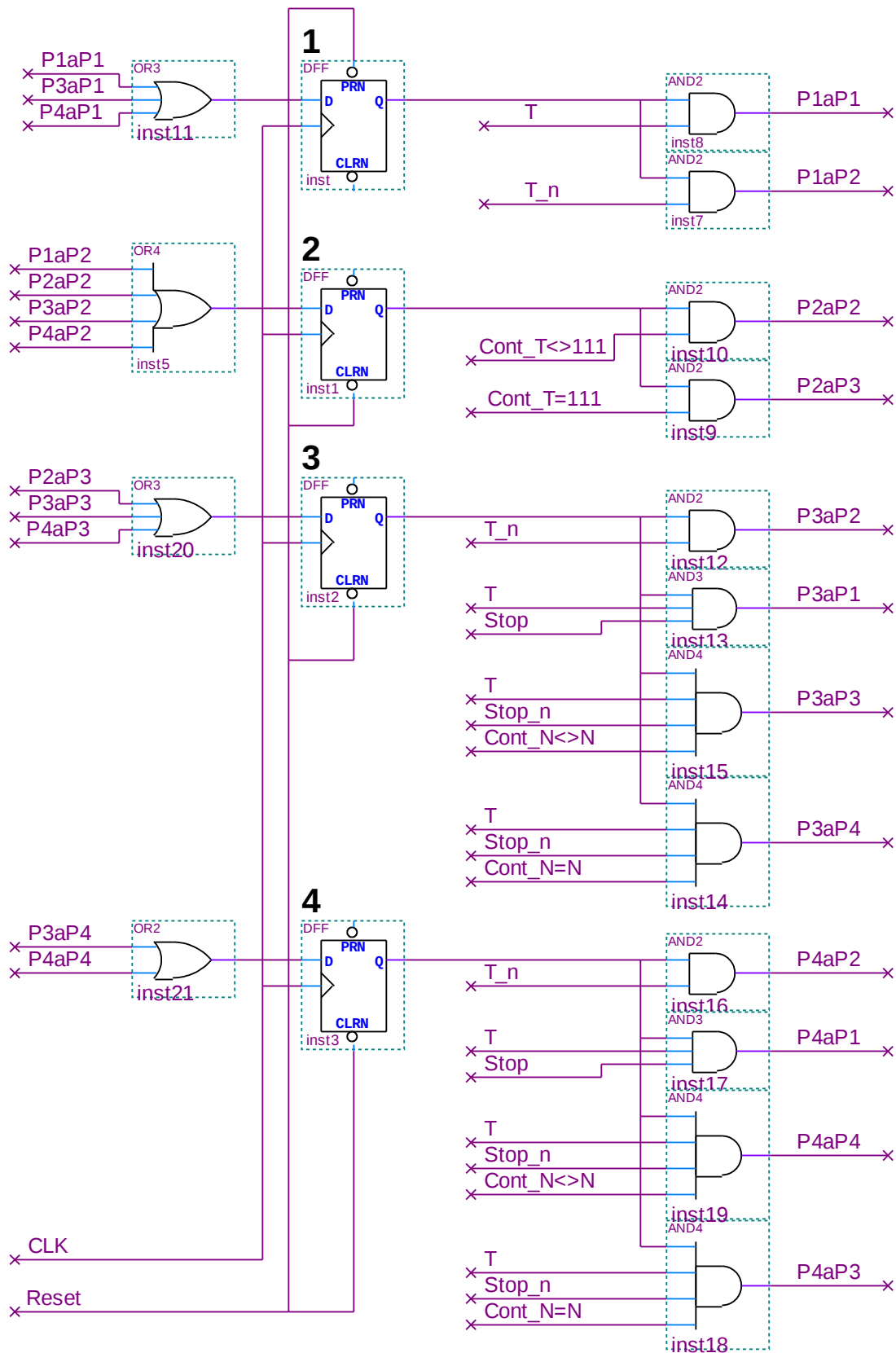
### END SEQUENCE

### CONTROL RESET(1)

Sec [1..0] = 11.(Cont\_4[ ]=00) + 10.(Cont\_4[ ]=01) + 11.(Cont\_4[ ]=10) + 01.(Cont\_4[ ]=11)

**END**

## BLOQUE DE CONTROL



**BLOQUE DE DATOS**

