Lista de Exercício 3 - 2023

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Data: 06/06/2023

Visto 9,5 10

(1) a) $01101_2 = \boxed{13_{10}}$

b) $11101_2 = \boxed{-3_{10}}$

↳ 00010_2

$+1$

$00011_2 = 3_{10}$

c) $01111011_2 = \boxed{123_{10}}$

d) $10011001_2 = \boxed{-103_{10}}$

↳ 01100110_2

$+1$

$01100111_2 = 103_{10}$

e) $01111111_2 = \boxed{127_{10}}$

(2) a) $6_{10} = 00000110_2$

$9_{10} = 00001001_2$

$$\begin{array}{r} 00000110 \\ +\,00001001 \\ \hline 00001111_2 \end{array} = \boxed{15_{10}}$$

b) $17_{10} = 00010001_2$

$-17_{10} = 11101111_2$

$14_{10} = 0000\,1110_2$

$$\begin{array}{r} {\scriptstyle 1\,1\,1} \\ 11101111 \\ +\,00001110 \\ \hline 11111101_2 \end{array} = \boxed{-3_{10}}$$

↳ 00000010_2

$+1$

00000011_2

c) 17 - 16

$17_{10} = 00010001_2$

$16_{10} = 00010000_2$

$-16_{10} = 11101111$

$+1$

11110000_2

$$\begin{array}{r} {\scriptstyle 1\ 1\ 1} \\ 00010001 \\ +\ 11110000 \\ \hline \text{overflow}\ \not{1}00000001_2 \end{array} = \boxed{1_{10}}$$

d) $13_{10} = 00001101$

$-13_{10} = 11110011$

$21_{10} = 00010101$

$-21_{10} = 11101011$

$$\begin{array}{r} {\scriptstyle 1\ 1\ \ \ 1\ 1} \\ 11110011 \\ +\ 11101011 \\ \hline \text{overflow}\ \not{1}11011110_2 \end{array} = \boxed{-34_{10}}$$

00100001

$+1$

$00100010_2 = 34$

e) 47 - 47

$47_{10} = 00101111$

$-47_{10} = 11010001$

$$\begin{array}{r} {\scriptstyle 1\ 1\ 1\ 1\ 1\ 1\ 1} \\ 00101111 \\ +\ 11010001 \\ \hline \text{overflow}\ \not{1}00000000 \end{array} = \boxed{0_{10}}$$

3) a) $95_{10} = 01011111_2$

$37_{10} = 00100101_2$

$$\begin{array}{r} {\scriptstyle 1\ 1\ 1\ 1\ 1\ 1\ 1} \\ 01011111 \\ +\ 00100101 \\ \hline 10000100 \end{array}$$

= ↳ incompatível c/ resultado positivo

b) $-95_{10} = 10100001_2$

$-37_{10} = 11011011_2$

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 10100001 \\ +\ 11011011 \\ \hline 101111100 \end{array}$$

= ↳ ultrapassou os 8bits

(4) a)

```
  111
x 101
-----
  111
 000
111
-------
100011
```

$111_2 = 7$

$101_2 = 5$

$35_{10} = \boxed{100011_2}$

b)

```
  1011
x 1011
-------
  1011
 1011
0000
1011
---------
1111001
```

$1011_2 = 11$

11×11

$121_{10} = \boxed{1111001_2}$

c)

```
  101 101
x 110 010
---------
  000 000
 101 101
000 000
101 101
101 101
-----------
100011001010
```

$101\,101 = 45$

$110010 = 50$

2250_{10}

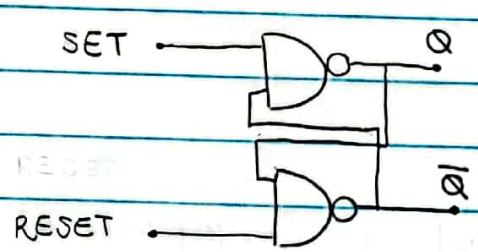
$\boxed{100011001010}$

(5) a)

A	B	Cin	Soma	S Carry
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

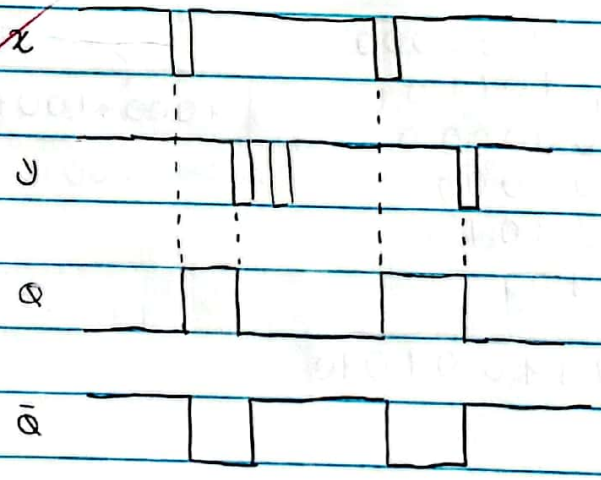
b) Mesmo resultado da tabela no LOGISIM

(6) a)

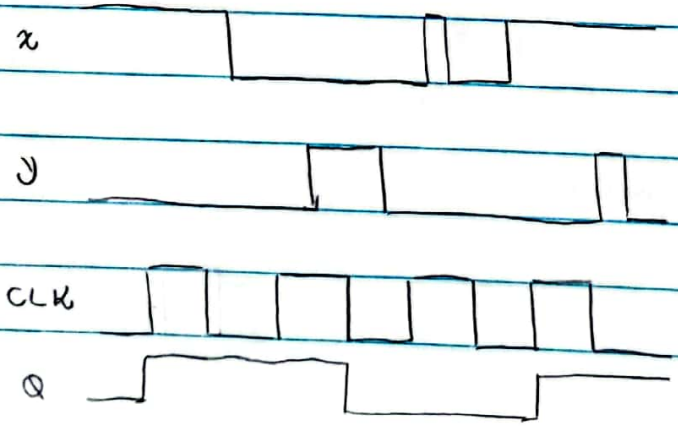


SET	RESET	Saída
1	1	não muda
0	1	1
1	0	0
0	0	inválida

b)



(7) a)



SET	RESET	CLK	Q
0	0	↑	ñ muda
1	0	↑	1
0	1	↑	0
1	1	↑	inval

b) Q

8 Q

positivo ↑

Q

negativo ↓

9 D_0

CLK

$\overline{CLR}$

$\overline{PRE}$

Q