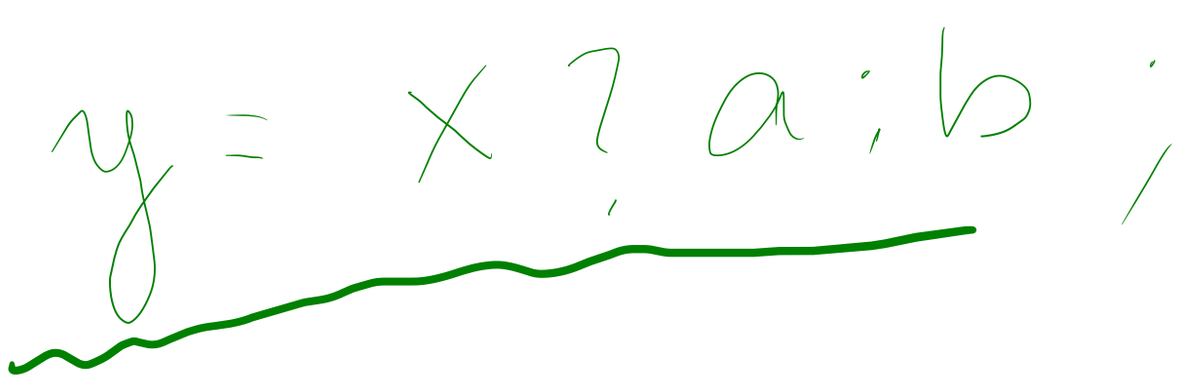


x == 1
y = a;

x == 0
y = b;

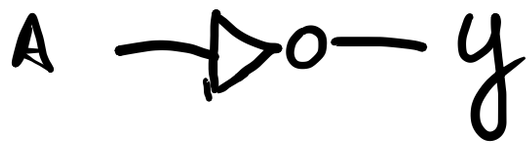
```
module mux4to1(input wire [1:0] S, input wire [3:0] D, output wire Y);

    assign Y = S[1] ? (S[0] ? D[3]:D[2]) : (S[0] ? D[1]:D[0]);
    /*
        if (S[1] == 1):
            if (S[0] == 1):
                Y = D[3]
            elif (S[0] == 0):
                Y = D[2]
        elif (S[1] == 0):
            if ((S[0] == 1):
                Y = D[1]
            elif (S[0] == 0):
                Y = D[0]
    */

endmodule
```

A	y
0V	5V
1V	4.8V
2V	4.6V
2.5V	4.3V
2.6V	4.0V
2.8V	2.1V
3.0V	0.8V
4.0V	0.2V
5.0V	0.0V

0 - 2.6V
1V

0.4V
3.2V

2.0V
0.8V



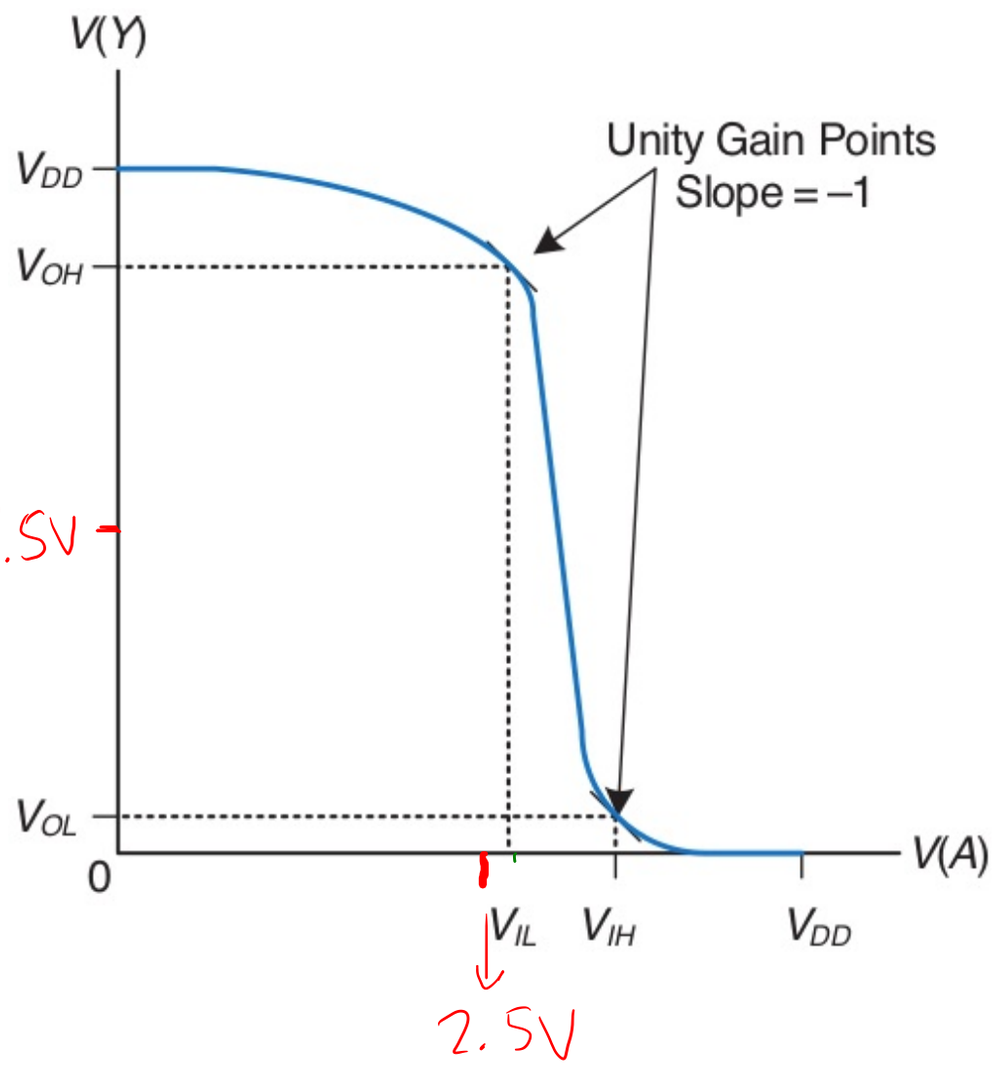
$V_{DD} = 5V$

$V_{OH} = 4V$

$V_{OL} = 0.8V$

$V_{IL} = 2.6V$

$V_{IH} = 3.0V$



Izg: Fairchild

V_{IL}: 2.0V ✓✓

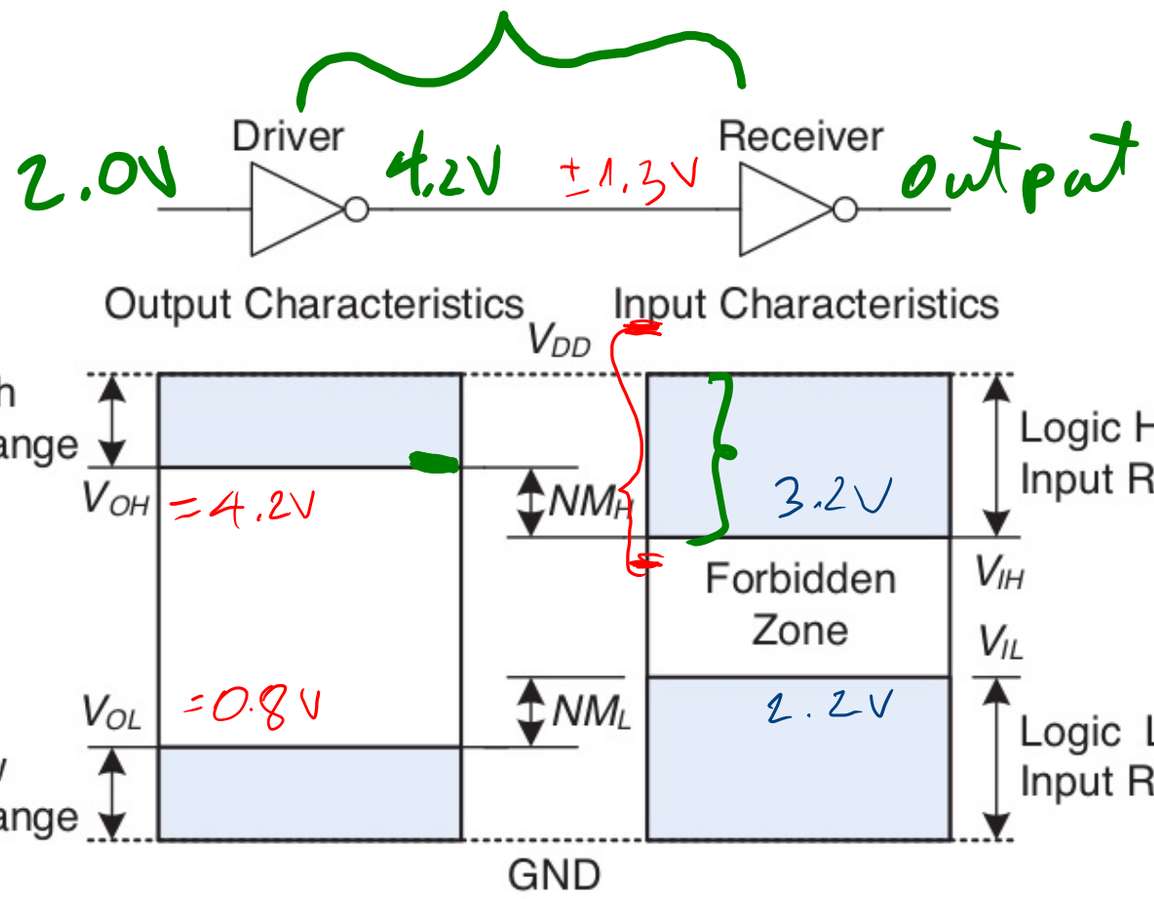
V_{IH}: 3.0V

V_{OL}: 0.8V

V_{OH}: 4.2V

$V_{DD} = 5V$

Noise: ± 1.3V



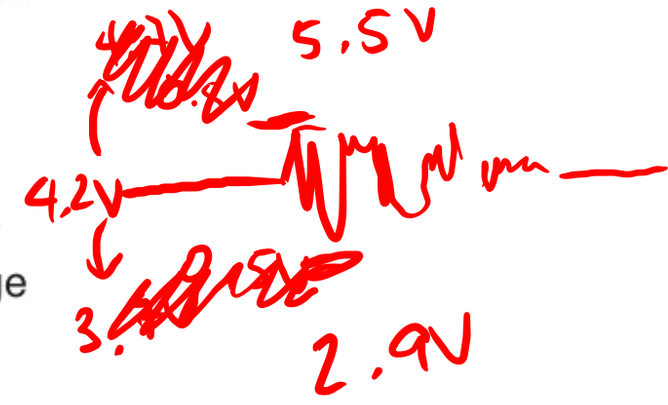
Dev: T.I.

V_{IL}: 2.2V

V_{IH}: 3.2V

V_{OL}: 1.0V

V_{OH}: 4.0V



$NM_H = 4.2 - 3.2 = 1.0V$

$NM_L = 2.2 - 0.8 = 1.4V$

Izg: Fairchild

V_{IL}: 2.0V ✗

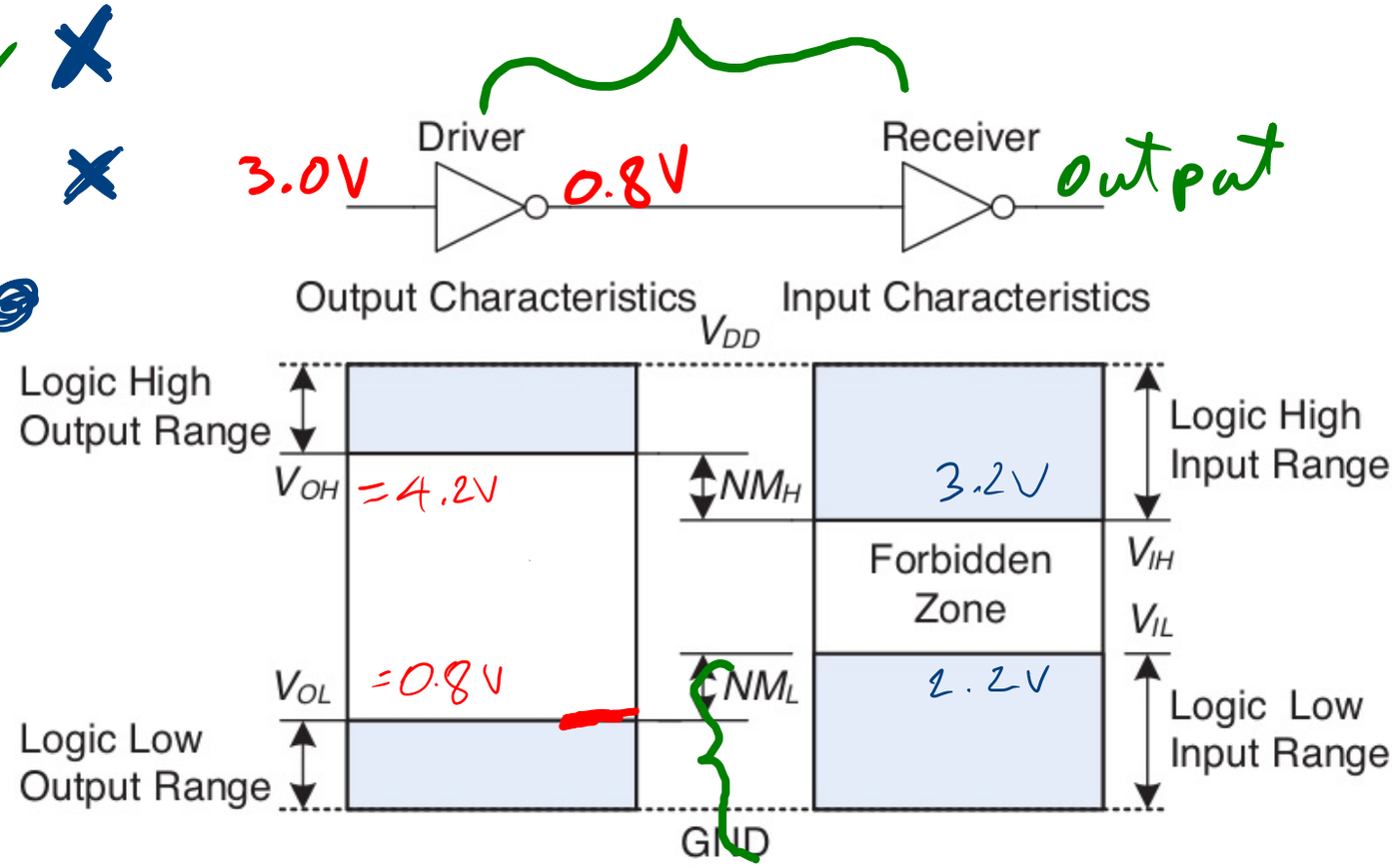
V_{IH}: 3.0V ✓ ✗

V_{OL}: 0.8V

V_{OH}: 4.2V

$V_{DD} = 5V$

Noise: ± 1.3V



$NM_H = 4.2 - 3.2 = 1.0V$

$NM_L = 2.2 - 0.8 = 1.4V$

Dev: T.I.

V_{IL}: 2.2V

V_{IH}: 3.2V

V_{OL}: 1.0V

V_{OH}: 4.0V

+1.3V => 2.1V

0.8V

-1.3V = -0.5V

$+24_{10} \Rightarrow$ $1\ 1000_2 \Rightarrow$ S.S.

↳ 2's $\Rightarrow$ $01\ 1000_2$

$+\ 24$

↑ signomag

$[0; 2^n - 1]$ n = bits = 5

$[0; 31]$

$[-2^{n-1}; 2^{n-1} - 1] = [-16; +15]$ n = 5

$[-32; +31]$ n = 6

$+24_{10}$
-10_{10} $= +24$ / $+(-10)$ / $+14_{10}$

1) 1 → neg

2) mag $\xrightarrow{2's}$ número final

S.S. 6bits: $00\ 1010_2 \rightarrow 10_{10}$

not $11\ 0101_2$

$+\ 1$

$11\ 0110_2 = -10_2$

$00\ 1010_2$

$11\ 0110_2$

$= -10_2$

$01\ 1000_2$ 2's

$+\ 11\ 0110_2$ 2's

$00\ 1110_2$ 2's

$+\ 14_{10}$

2) $27 \Rightarrow \quad 01\ 1011_2$ 27

$+31 \Rightarrow \quad +01\ 1111_2$ 31

$11\ 1010_2 = -6_{10}$

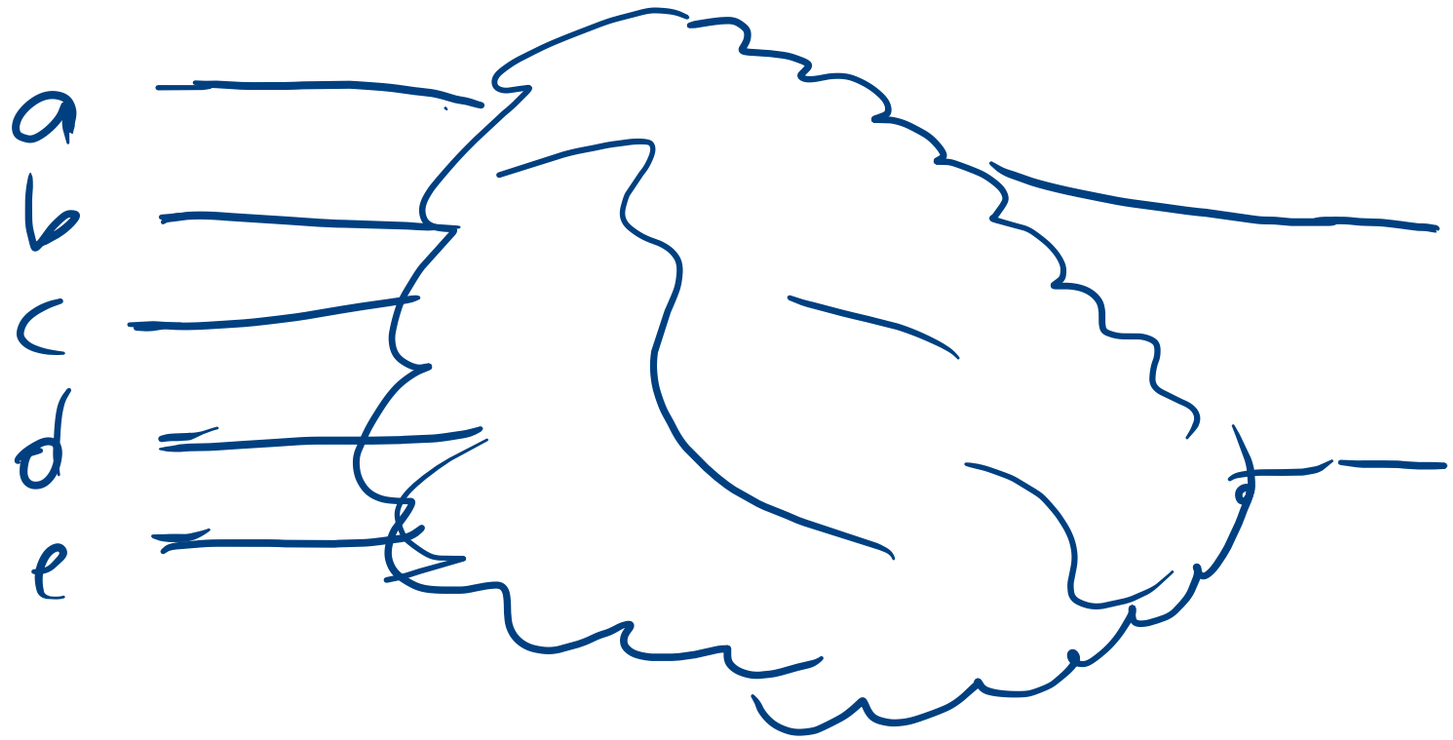
S.S.

$32_1 6\ 8\ 4\ 2\ 1$

27 + 31 = 58_{10}

n = 6 2's $[-32; +31]$

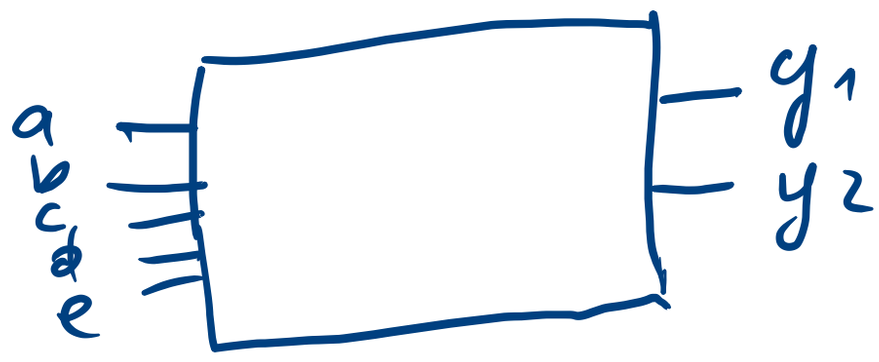
$00\ 0110_2 = 6_{10}$



vista chimica

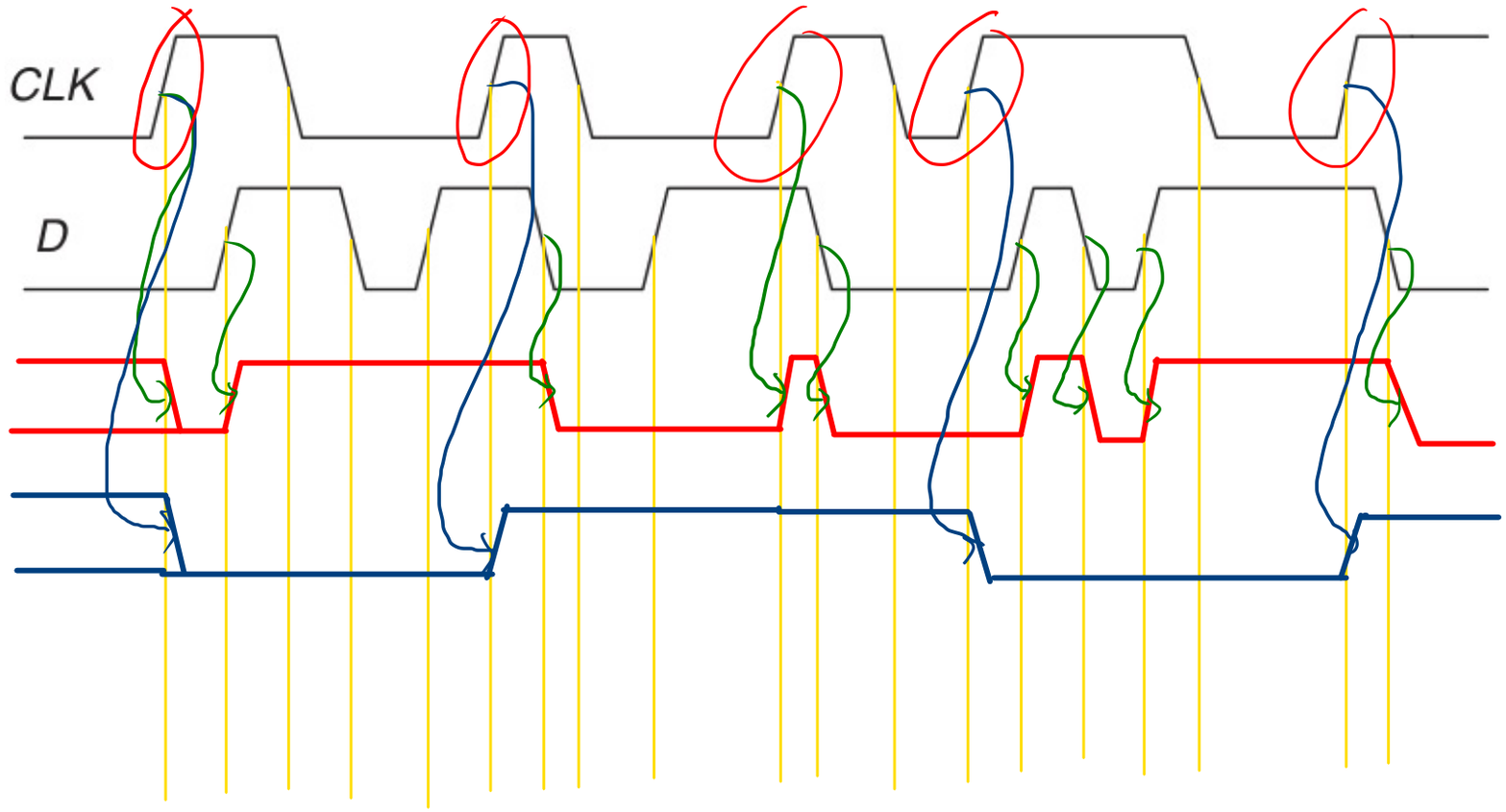
t_{pd} =

t_{cd} =



Latch D Q

FF D Q

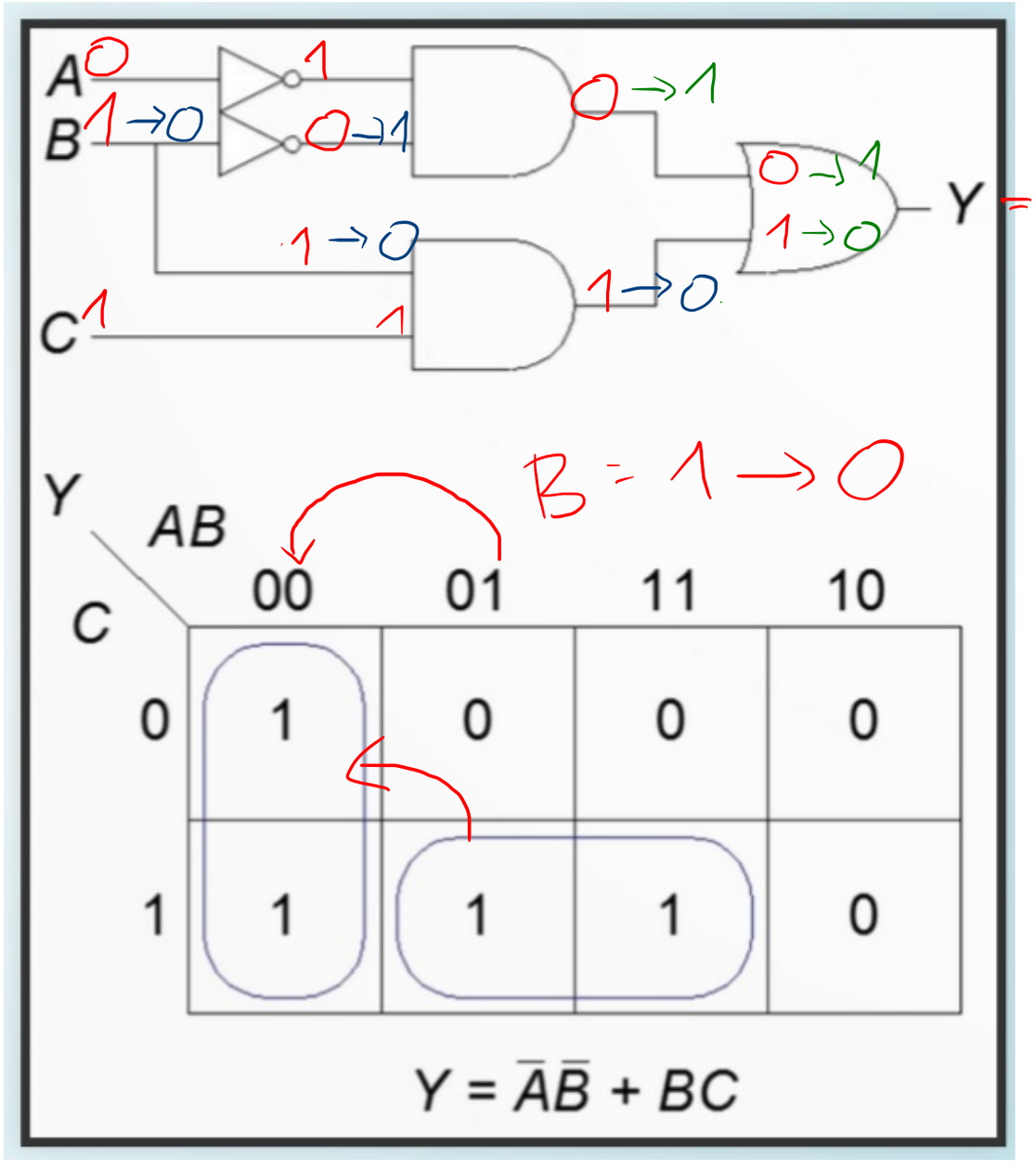


$t_{pd} = 1\,s$

A = 0
B = 1
C = 1
} $y = 1$

A = 0
B = 0
C = 1
} $y = 1$

B = 1 → 0



$$y = \bar{B} + C$$

A B C	y
x 0 x	1
x x 1	1
x 1 0	0

A B C	y
0 0 0	1
0 0 1	1
0 1 0	0
0 1 1	1
1 0 0	1
1 0 1	1
1 1 0	0
1 1 1	1

A B C	y
x 1 0	0

$$(A+\bar{B}+C)(\bar{A}+\bar{B}+C) = y$$

$$(A+P)(\bar{A}+P) = y$$

$$P = y = \bar{B} + C$$