17/10/2019

EE5311

TUTORIAL-3
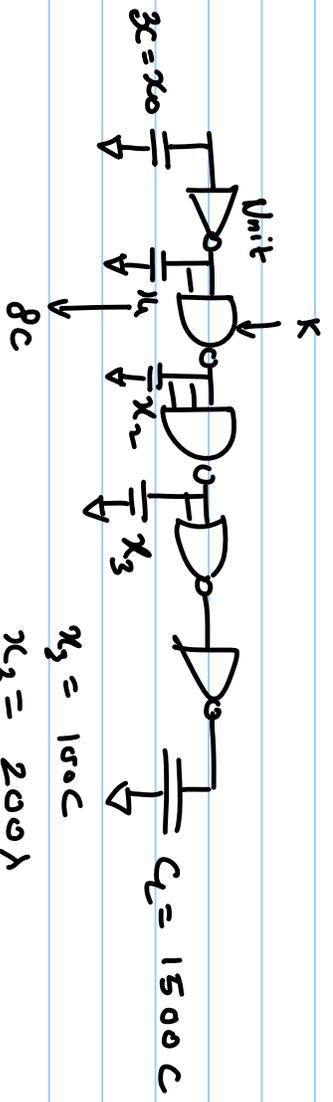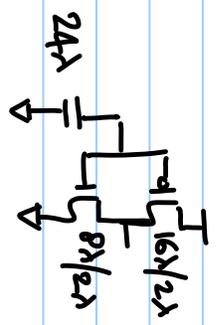
$x = x_0$ Unit x_u x_2 x_3 K

$8C$

$C_L = 1500C$

$5KC = 1000C$
$\therefore K = 20$

$x_3 = 100C$
$x_3 = 200\lambda$

$C_L = \boxed{2250\lambda}$

$4KC = 8C$
$\therefore K = 2$

$x_4 = 48\lambda$

$16\lambda/2\lambda$

$8\lambda/2\lambda$

24λ

V_{DD}

48λ

MODULE 4:

β

β

PDN

HI.SKEW

CVSL

Y

Ȳ

f

$\bar{f}$

A

Ā

Y

V_{DD} (1.0V) → 1.3V

$(0-V_{DD}')$
1.2V

if $V_{DD}' > V_{DD}$

if $A = V_{DD}' = 1.2V \Rightarrow V_{GSp} = +0.2V$

if $V_{DD}' = 0.8V$ & $A = V_{DD}' = 0.8$
$V_{GSp} = -0.2V$

$V_{DD} = 1.8V$

A

P_1 — N_1 — Y

N_2 — $\bar{A} = 0$

P_2 — V_{DD}

Y
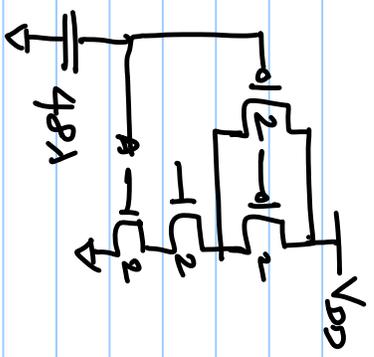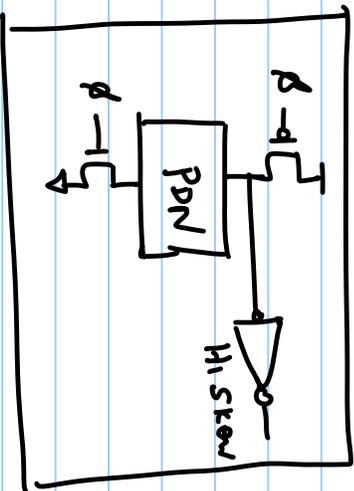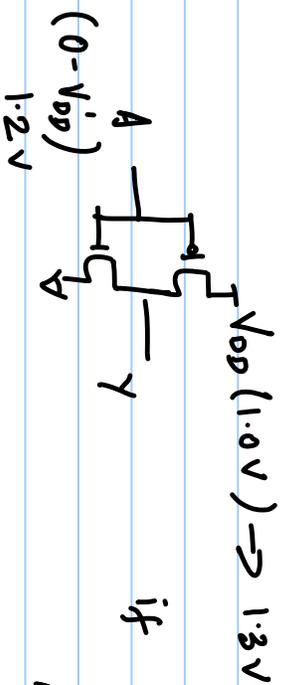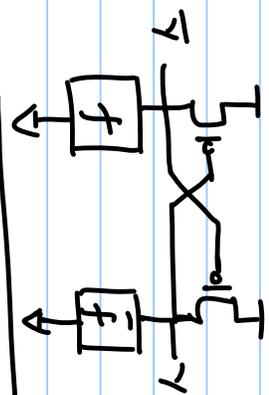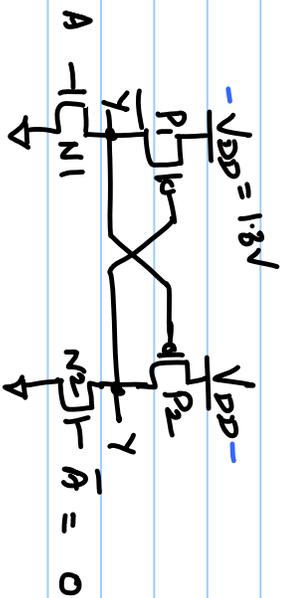
A = 0.8V

$A = 0.8V \Rightarrow N1$ is ON

⇒ GATE OF P_2 = LOW VOLTAGE

⇒ P_2 TURN ON

⇒ $Y = V_{DD}$ (N_2 IS OFF)

⇒ V_{GSP} OF $P_1 = 0$

⇒ P_1 IS OFF

⇒ CVSL IS GOOD FOR LEVEL TRANSLATION FROM LOW TO HIGH V_{DD} DOMAIN

250n — 14nm — 60nm

3.3 V

0-3.3V

V_{IO}

$V_{DD} = 1.0V$

V_{DD}

0-1V

0-1V

0-3.3V

O/P PAD

LT LIKE CMOS LOGIC

3.3V/0

V_{IO}

V_{IO}

$V_{DD} = 1V$

THICK OXIDE DEVICES

$t_{ox} \sim 3\,nm$
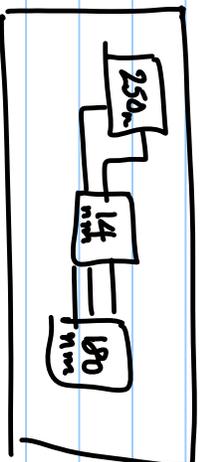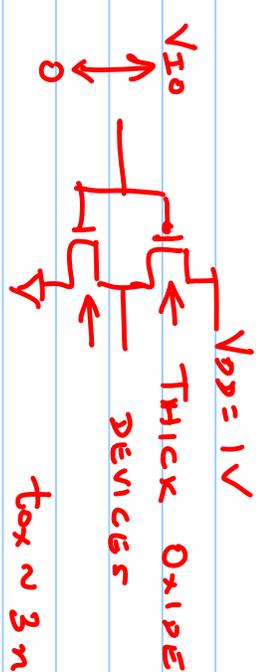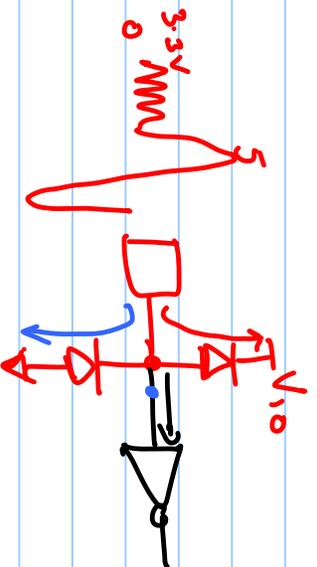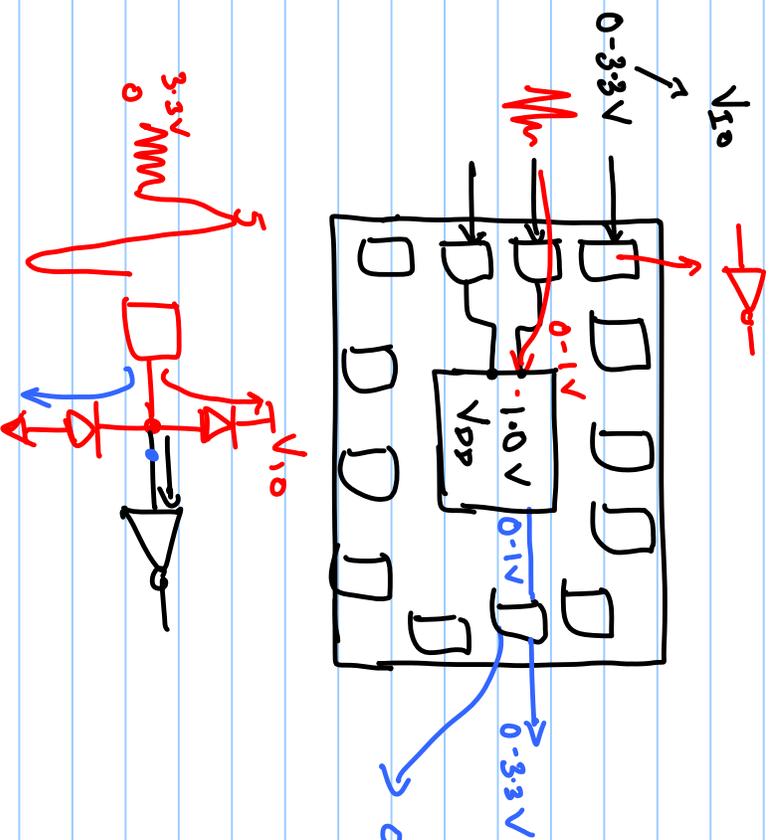
For THIN OXIDE

$t_{ox} \sim 1\,nm$

in 14nm tech

ALU

V_{DD}

SRAM

V_{CS}