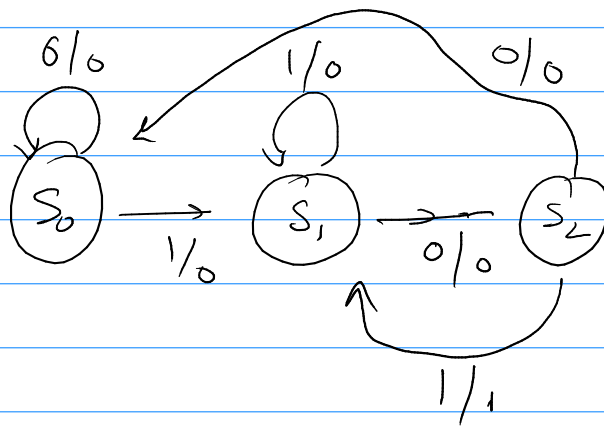


Lecture #15

ADD.

State Machine \rightarrow
MEALY M/C.

101



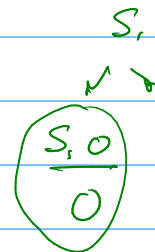
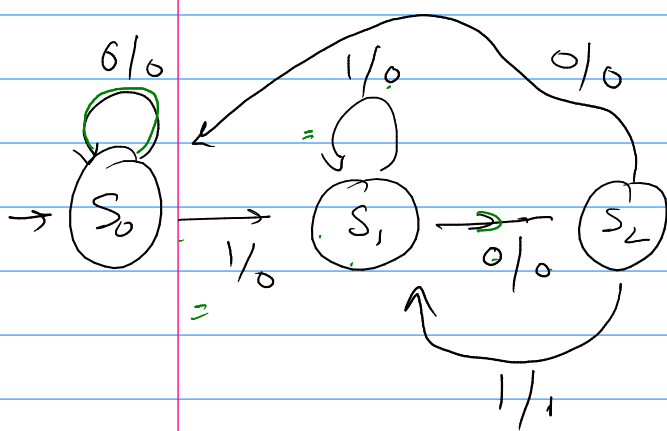
$$N.S. = f(P.S., i/p)$$

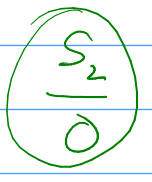
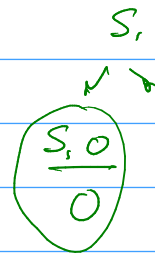
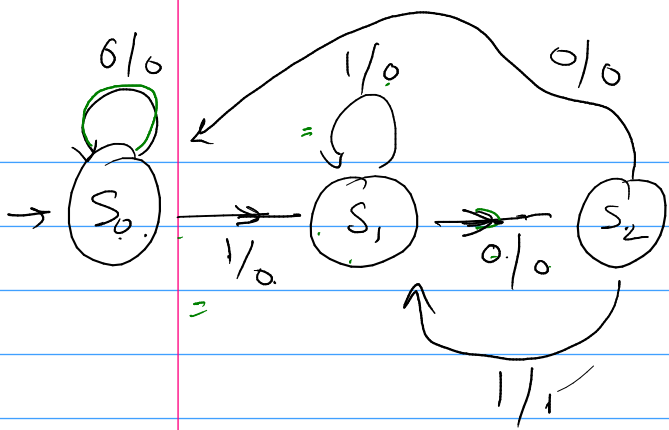
$$o/p = f(P.S., i/p)$$

Moore M/C

$$N.S. = f(P.S., i/p)$$

$$o/p = f(P.S.)$$





i/p

0

i/p

1

S0

S0 0

S1 0

S1

S2, 0

S1, 0

S2

S0, 0

S1, 1

⋮

S0 →

S1, 0

S1, 1

S2

i/p

0

S0, 0

S2, 0

S2, 0

S0, 0

i/p

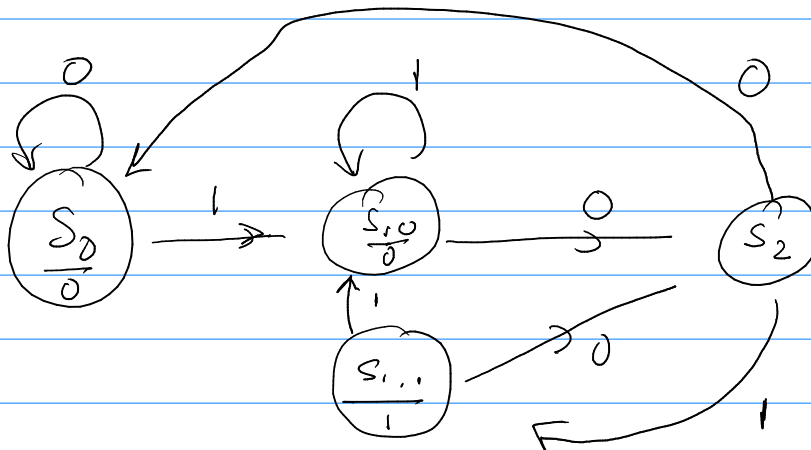
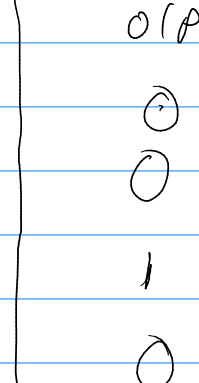
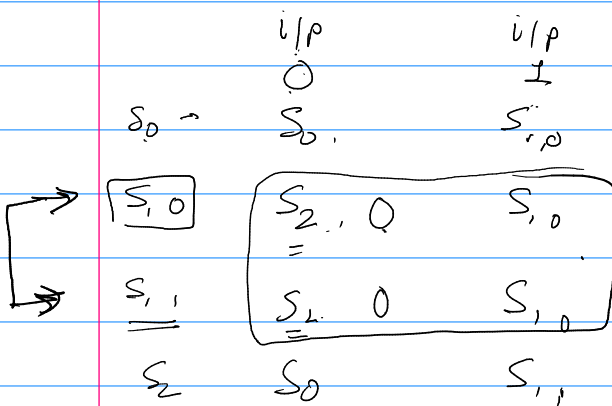
1

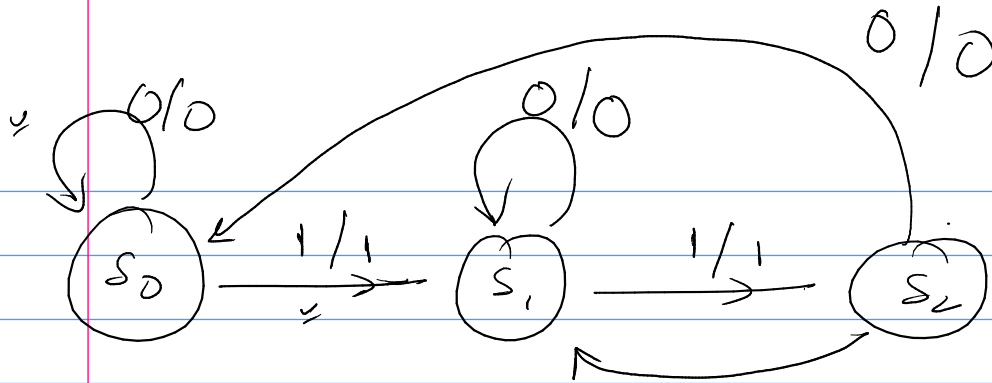
S1, 0

S1, 0

S1, 0

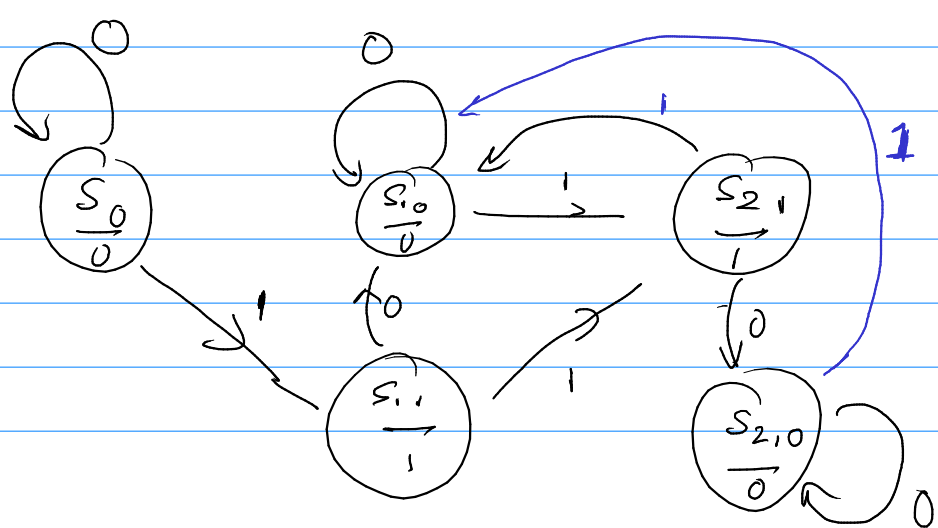
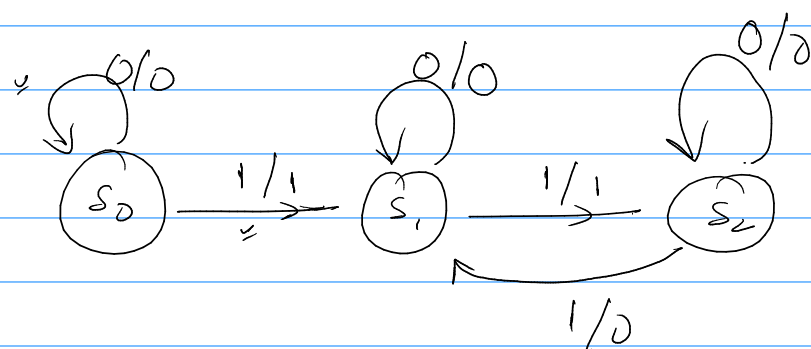
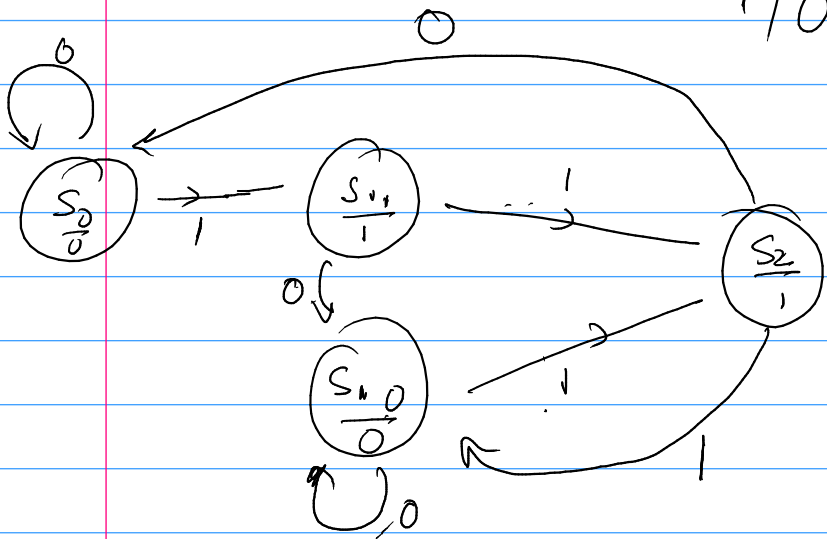
S1, 1

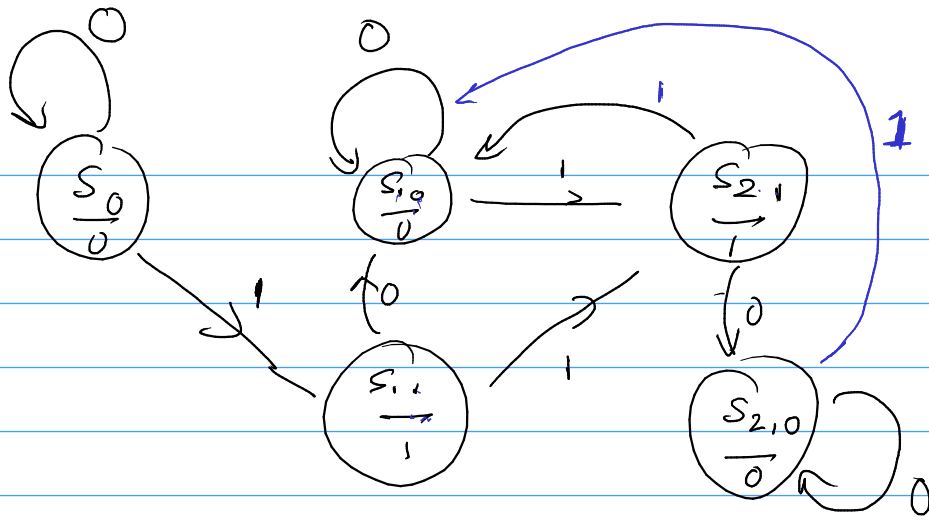




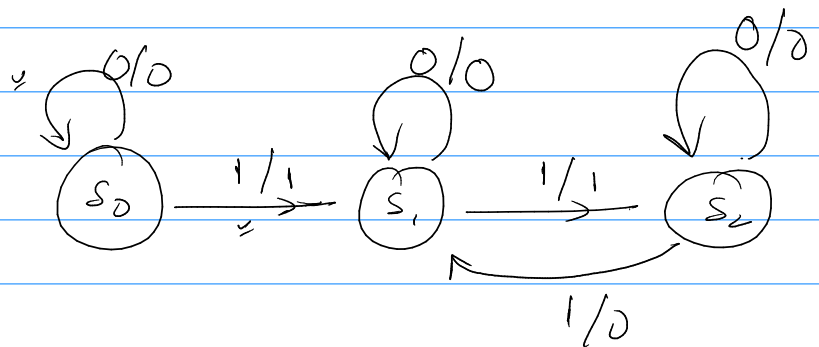
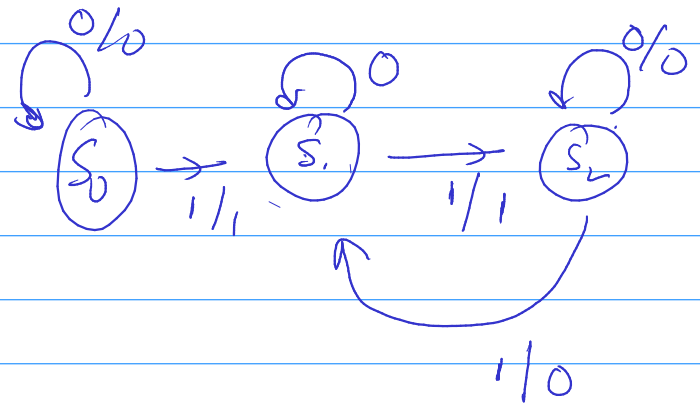
$\frac{s_0}{0}, \frac{s_{1,0}}{0}, \frac{s_{1,1}}{1}$

s_2



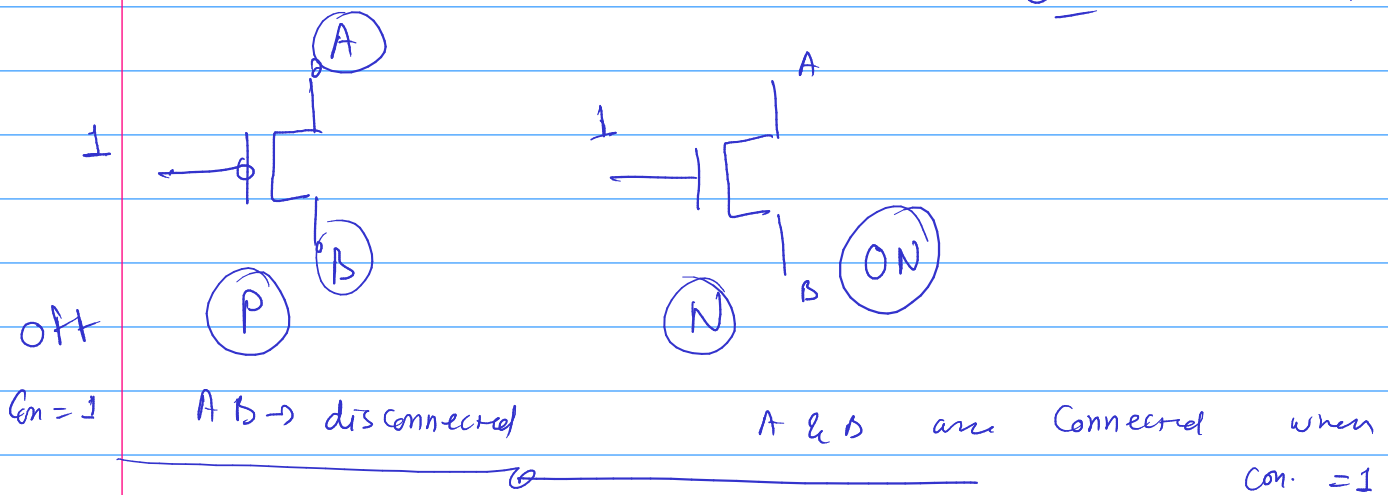
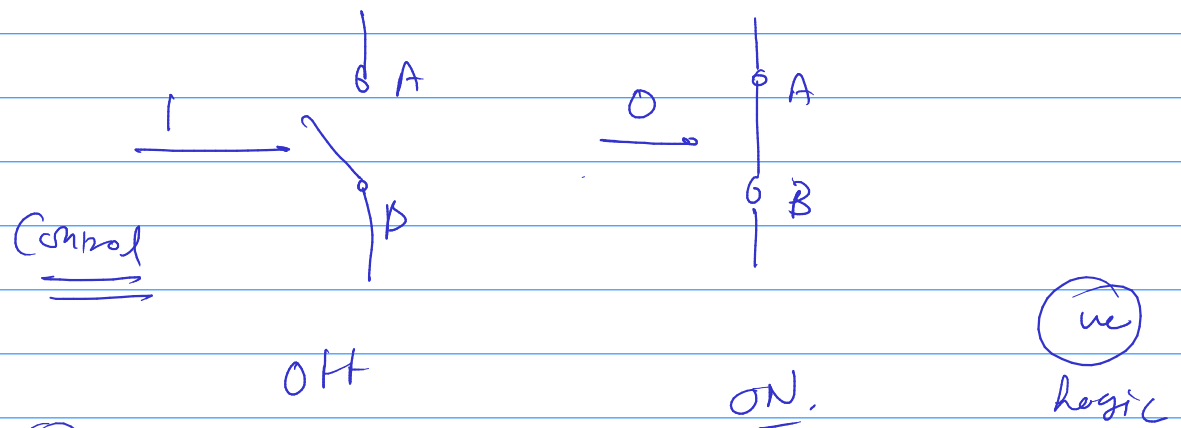
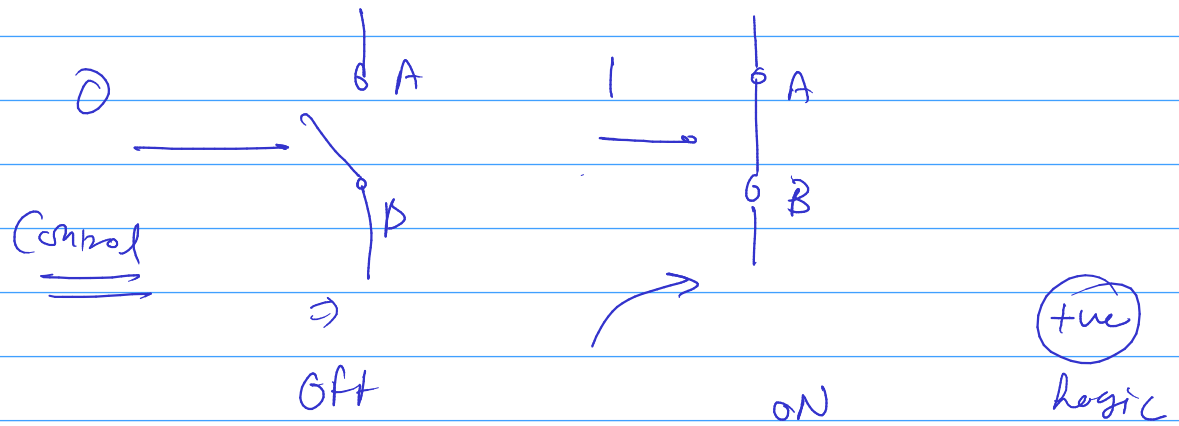


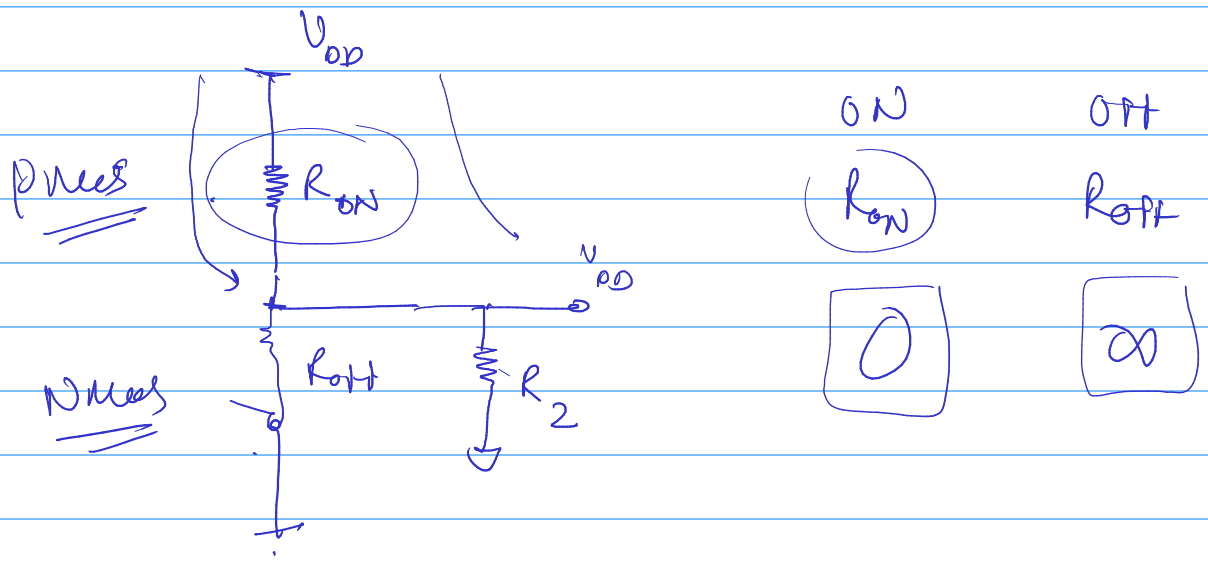
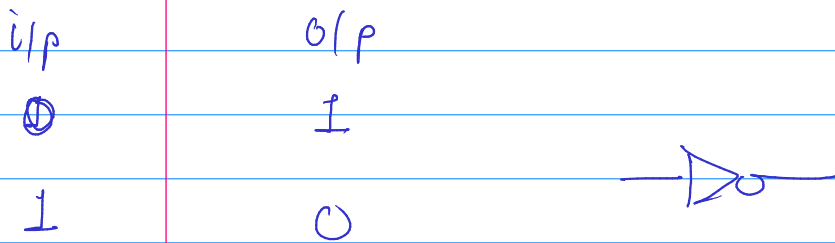
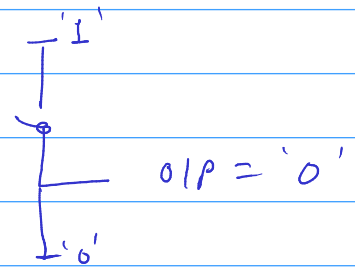
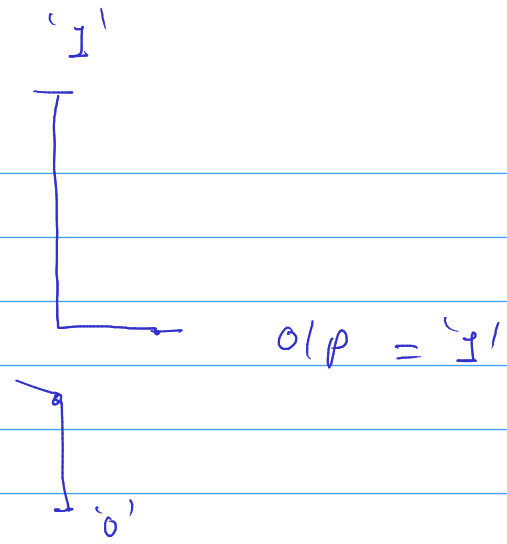
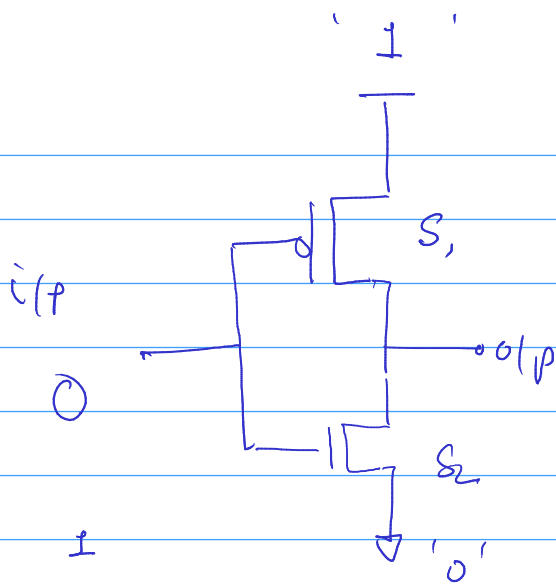
	0	1	
$S_0 \rightarrow S_0$	$(S_{1,1}) \rightarrow 0$		
$(S_{1,0}) \rightarrow S_{1,0}$	$S_{2,1} \rightarrow 0$		
$S_{1,1} \rightarrow S_{1,0}$	$S_{2,1} \rightarrow 1$		
$S_{2,0,1} \rightarrow S_{2,0,1}$	$S_{1,0} \rightarrow 0$		
$S_{2,1,1} \rightarrow S_{2,0}$	$S_{1,0} \rightarrow 1$		



Switch level GATE implementation.

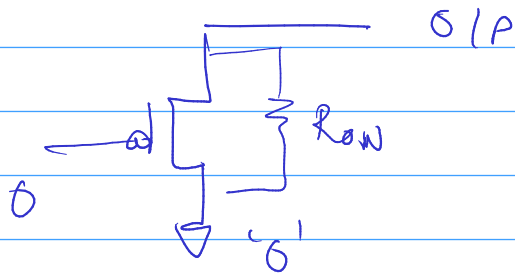
#





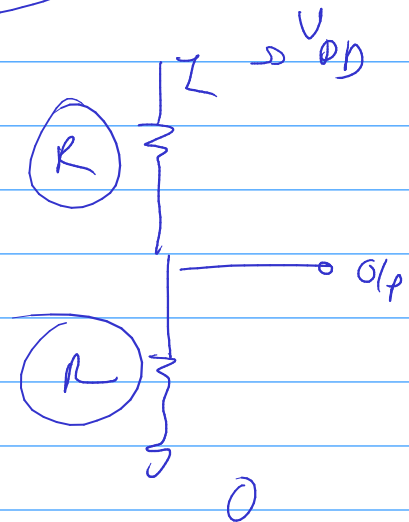
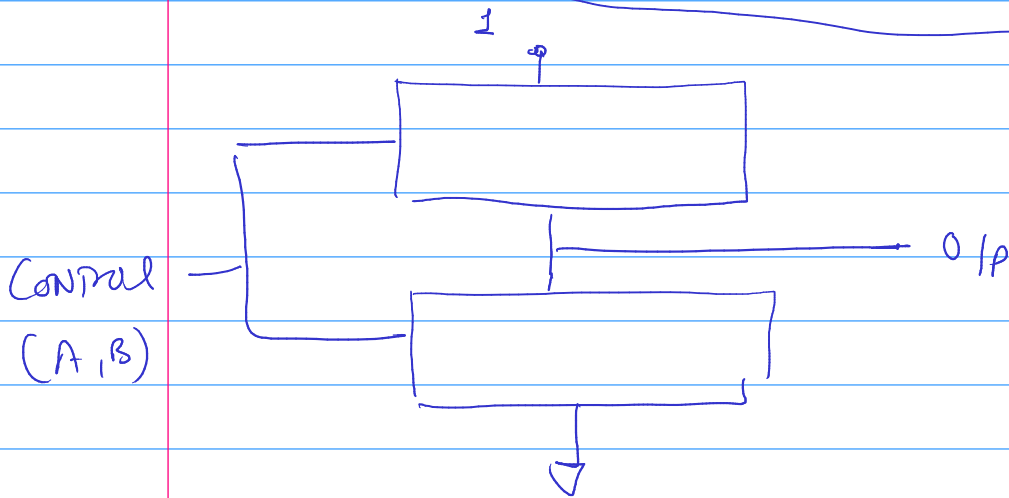
Pmos →
 '1' → R_{ON} → lesser
 '0' → R_{ON} → more

Nmos →
 '0' → R_{ON} → lesser
 → R_{OFF} → more

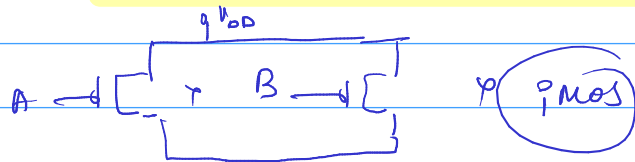


NAND

A	B	O/P
0	0	1
0	1	1
1	0	1
1	1	0

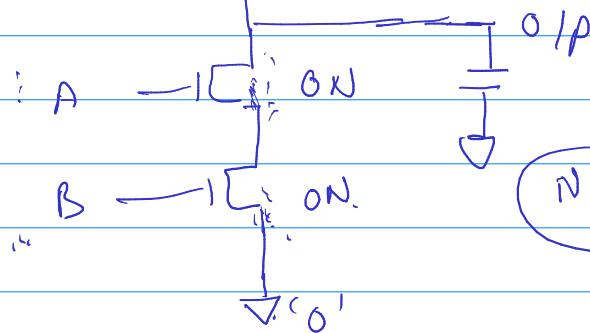


A	B	o/p
0	0	1
0	1	1
1	0	1
1	1	0 ✓

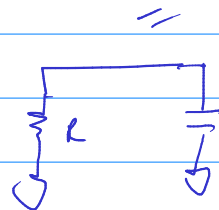
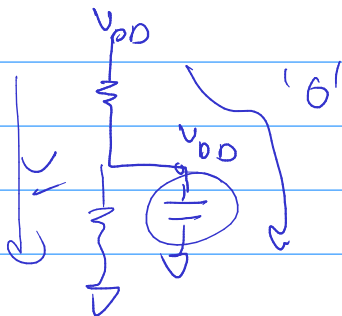
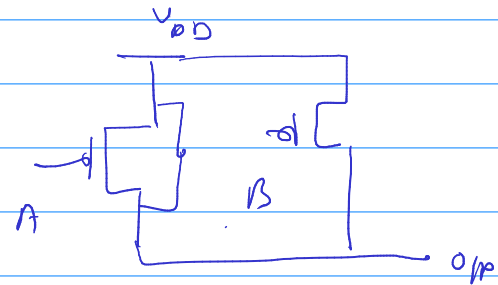
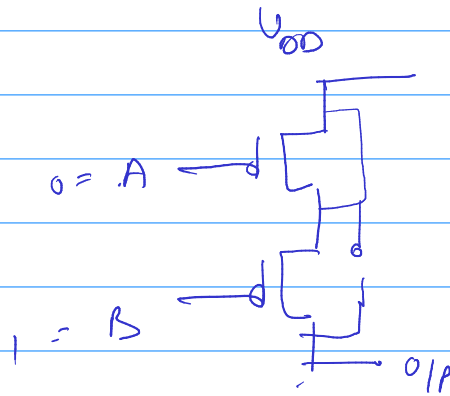
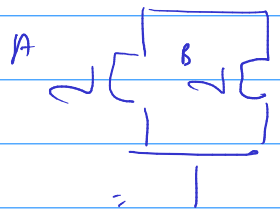


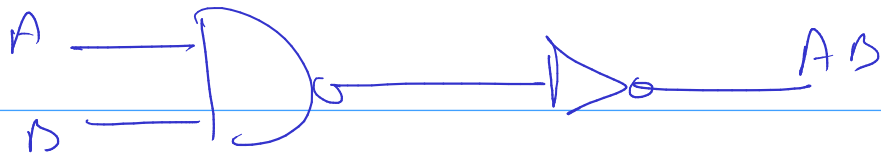
PMOS

CMOS



NMOS



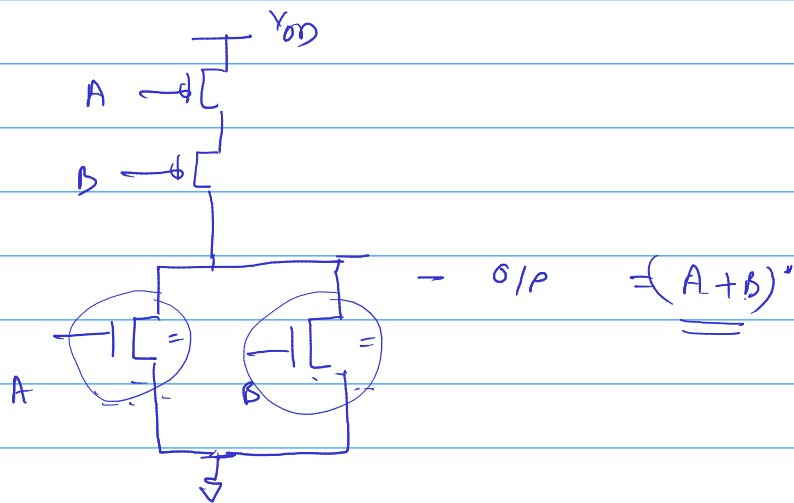


NOR

$$(A + B)'$$

⇒

A	B	O/P
0	0	1
0	1	0
1	0	0
1	1	0



N mos → Series → NOT (AND) ⇒ $! [AB]$

N mos → || → NOT (A+B) ⇒ $! (A+B)$