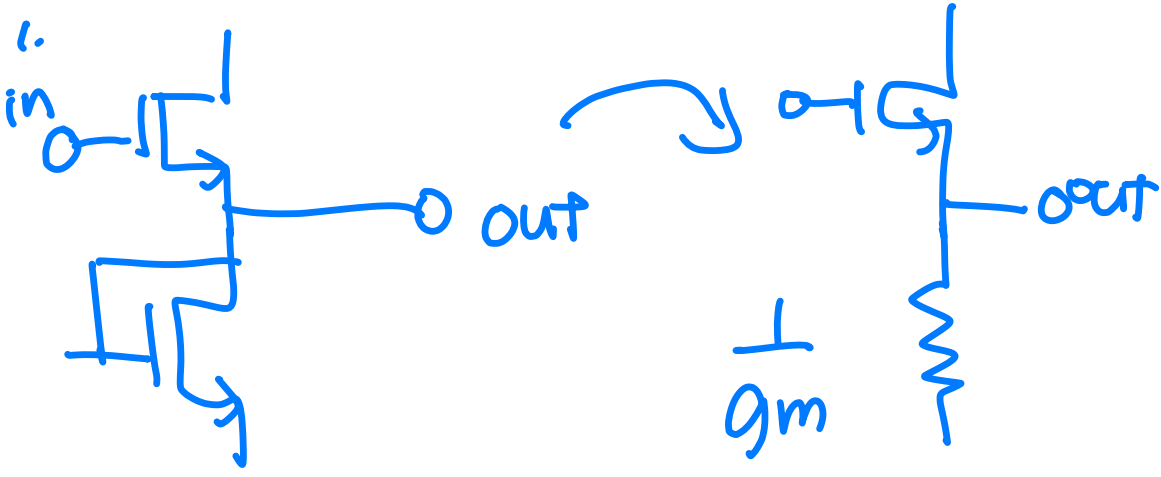
18-421 / 623

Recitation (4:10~)

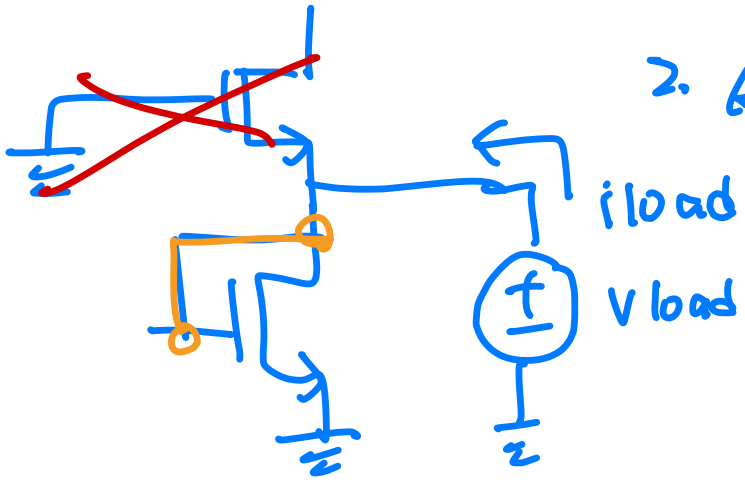
* Only 18-421/623 students in this room
* OH after recitation, waitlist on whiteboard

1.

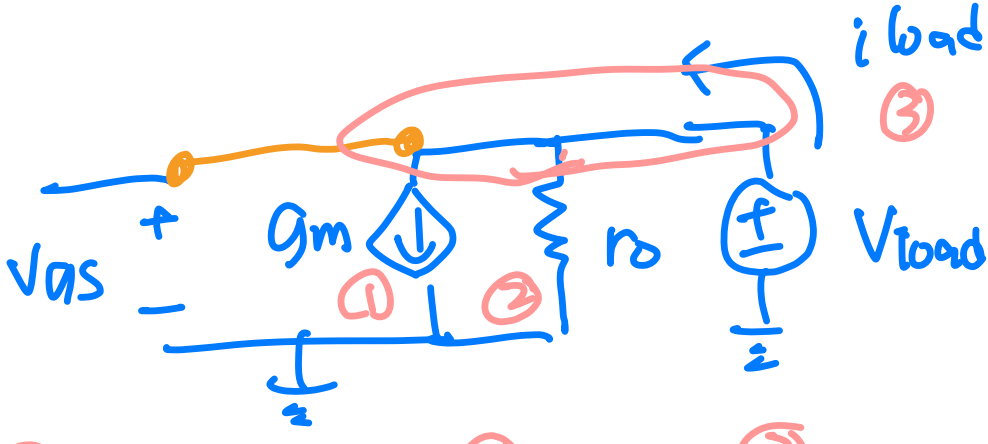


2. PMOS SS Model

1. AC grounded
2. Add a test src



Step 1 ss model



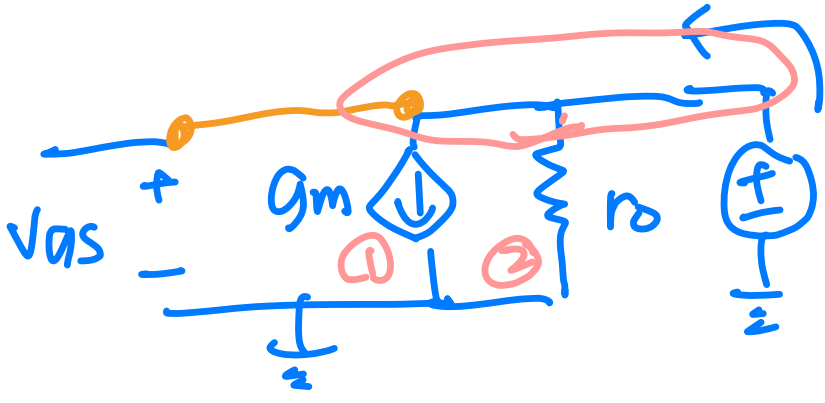
① ② ③

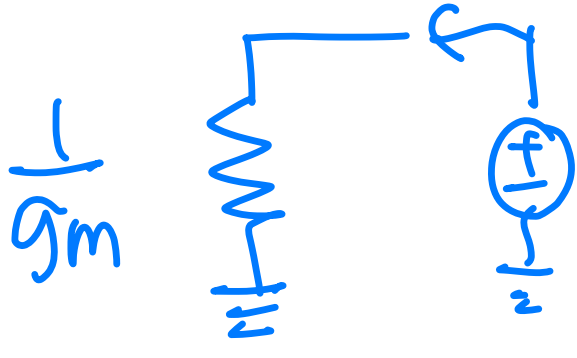
$$g_m(V_{load} - 0) + \frac{V_{load} - 0}{r_o} = i_{load}$$

$$\Rightarrow V_{load}\left(g_m + \frac{1}{r_o}\right) = i_{load}$$

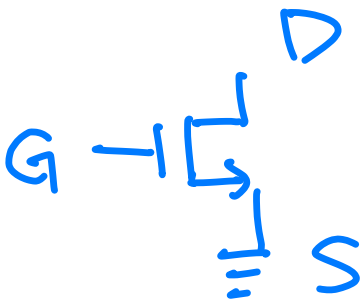
$$\Rightarrow R = \frac{V_{load}}{i_{load}} = \frac{1}{g_m + \frac{1}{r_o}} = \frac{1}{g_m} \parallel r_o$$

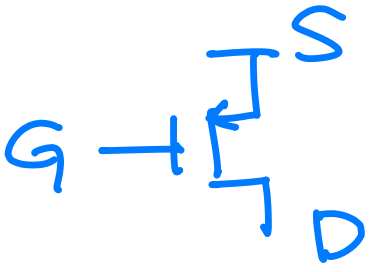
$$r_o \gg \frac{1}{g_m} \Rightarrow R \approx \frac{1}{g_m}$$



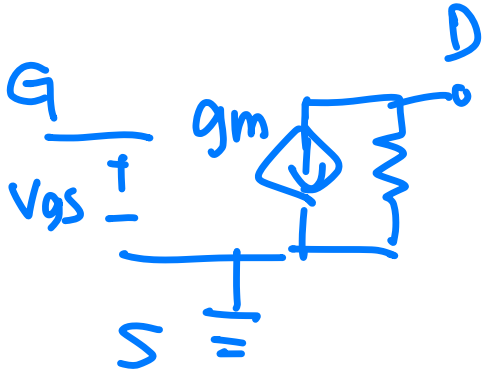


2. PMOS SS Model

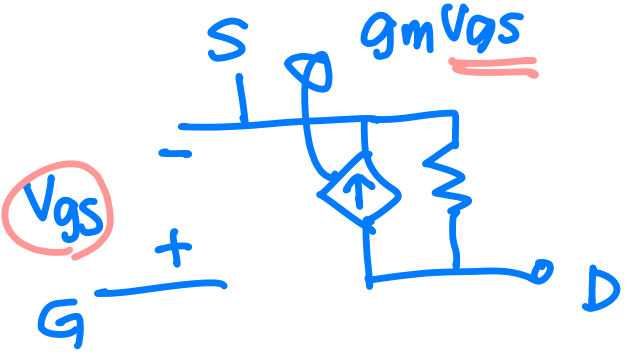


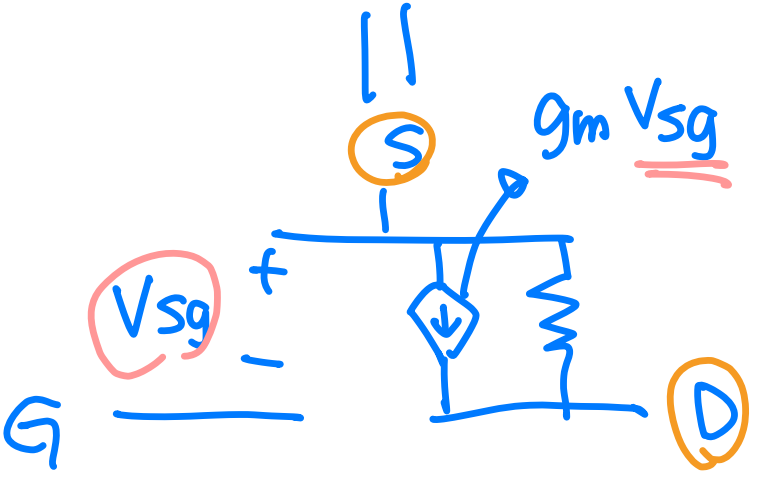


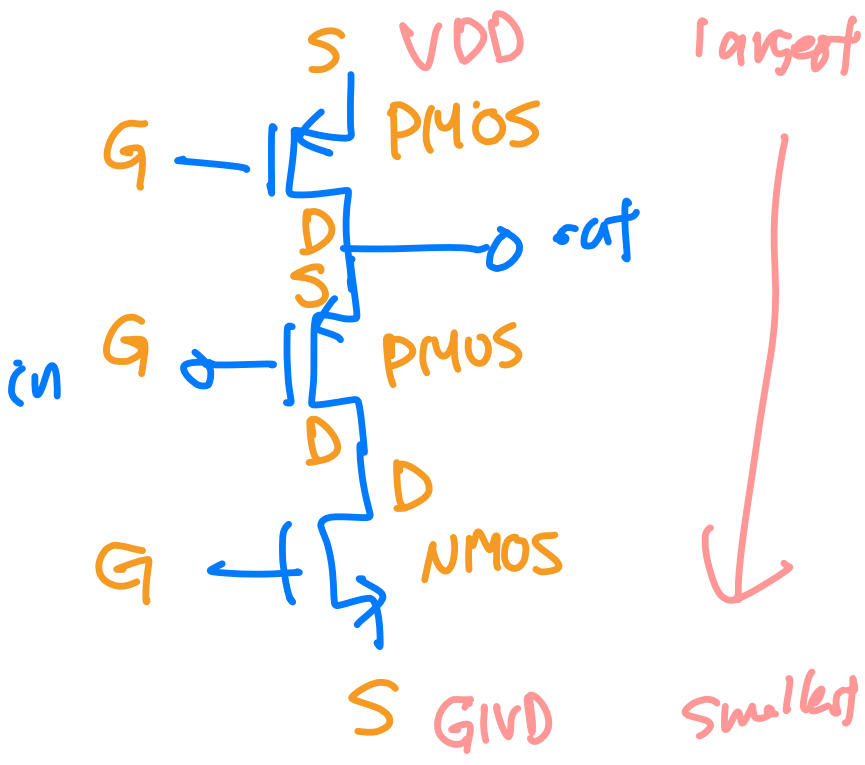
NMOS



PMOS






S
VDD
PMOS
G
D
out
S
G
in
PMOS
D
D
G
NMOS
S
GND
largest
smallest