

EE 421 / ECG 621

# Digital IC Design

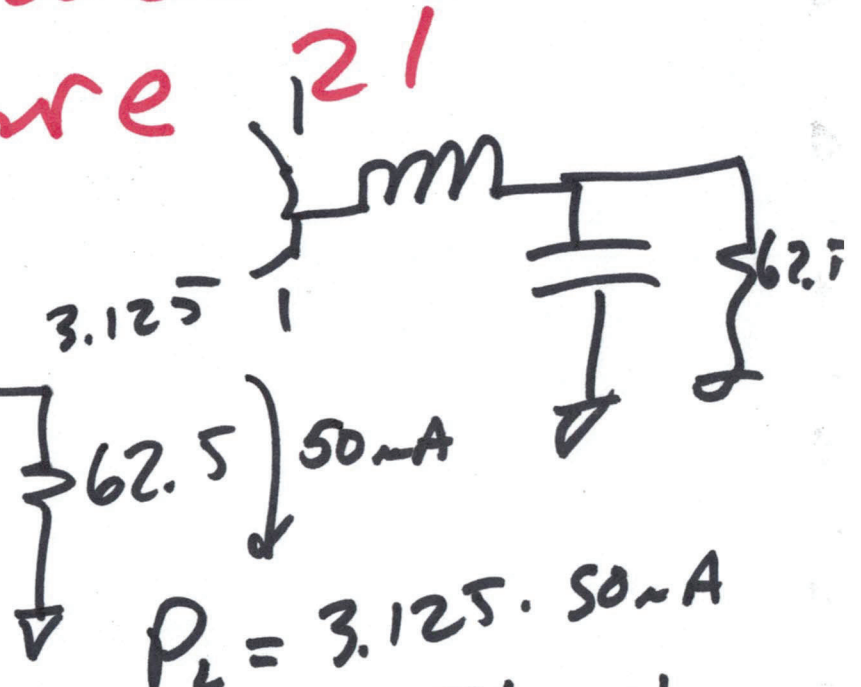
NOV. 15, 2023



$$V_{out} = 0.000$$

$$31\mu A = D \cdot 50\mu A$$

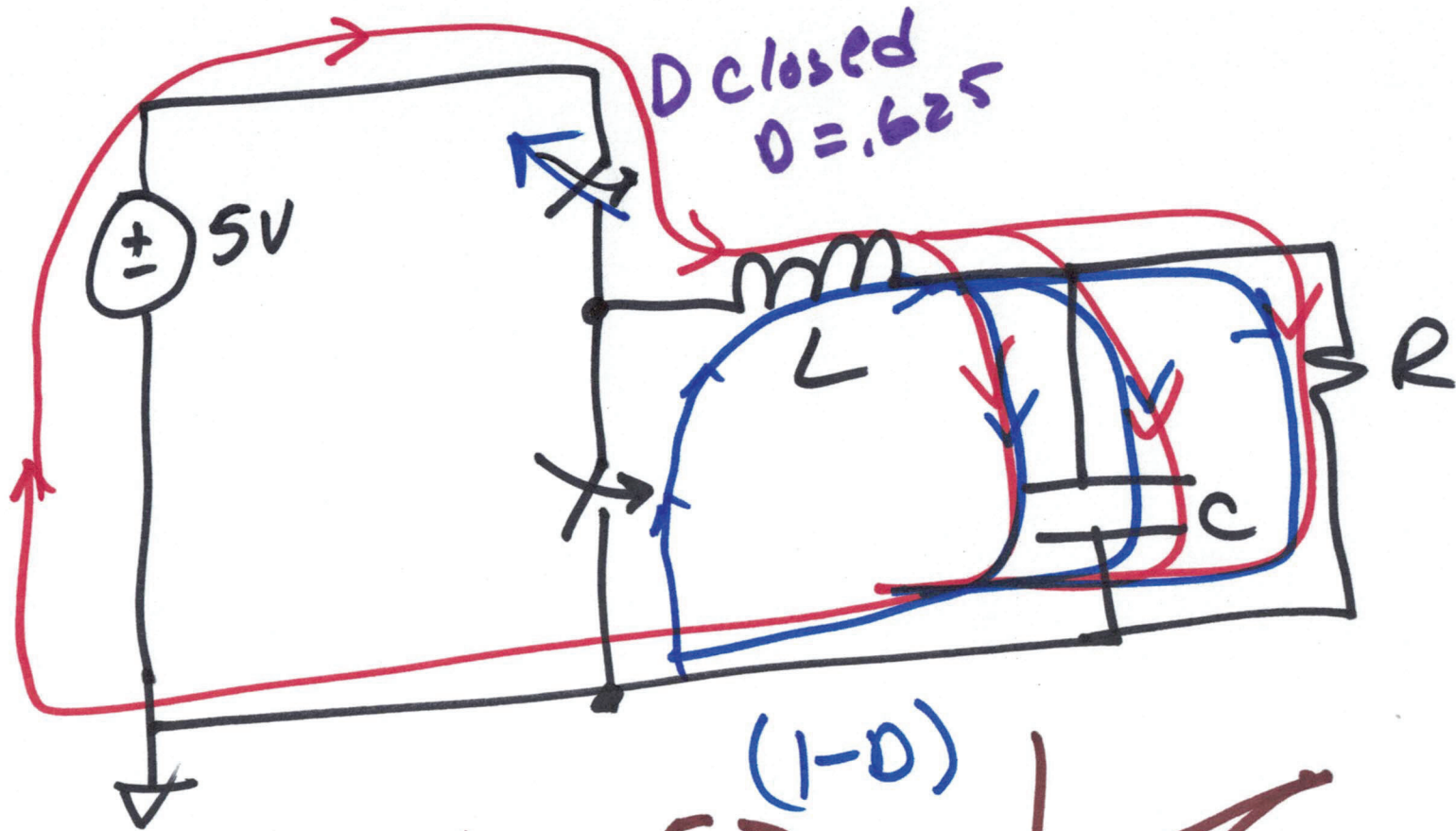
$$D = \frac{3.125}{5} = .625 \text{ Eff.}$$



$$P_L = 3.125 \cdot 50\mu A$$

$$= 156\mu W$$

$$I_{supply} = 31\mu A$$

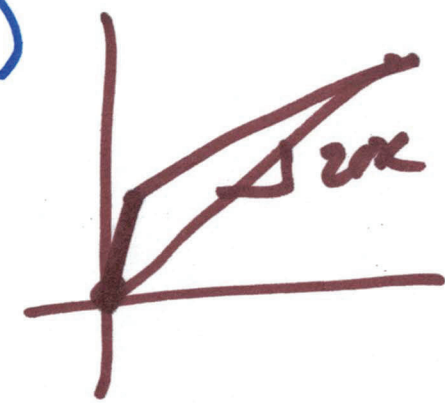


D closed  
 $D = .625$

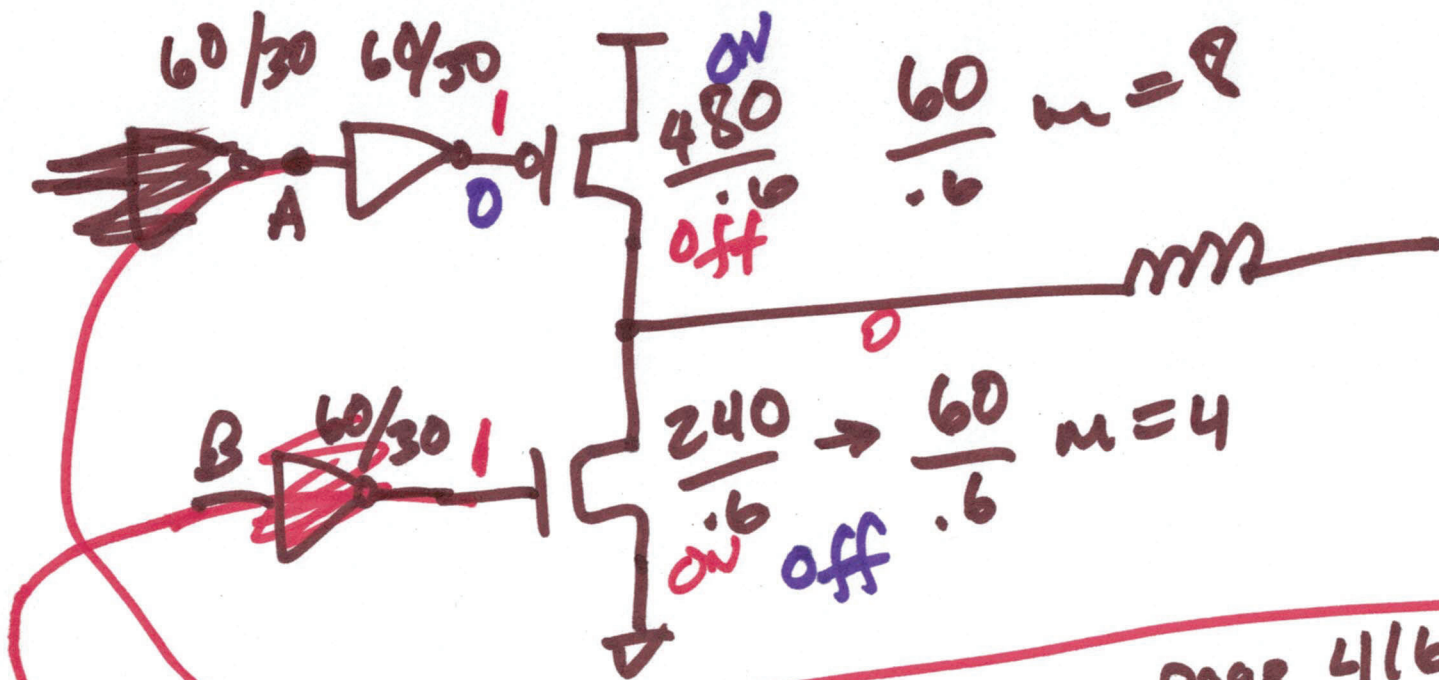
$$\frac{250 \mu V}{50 \mu A} = 5 \Omega$$

$$50 = 20k \cdot \frac{1}{5} \cdot .6 \cdot \frac{480}{.6}$$

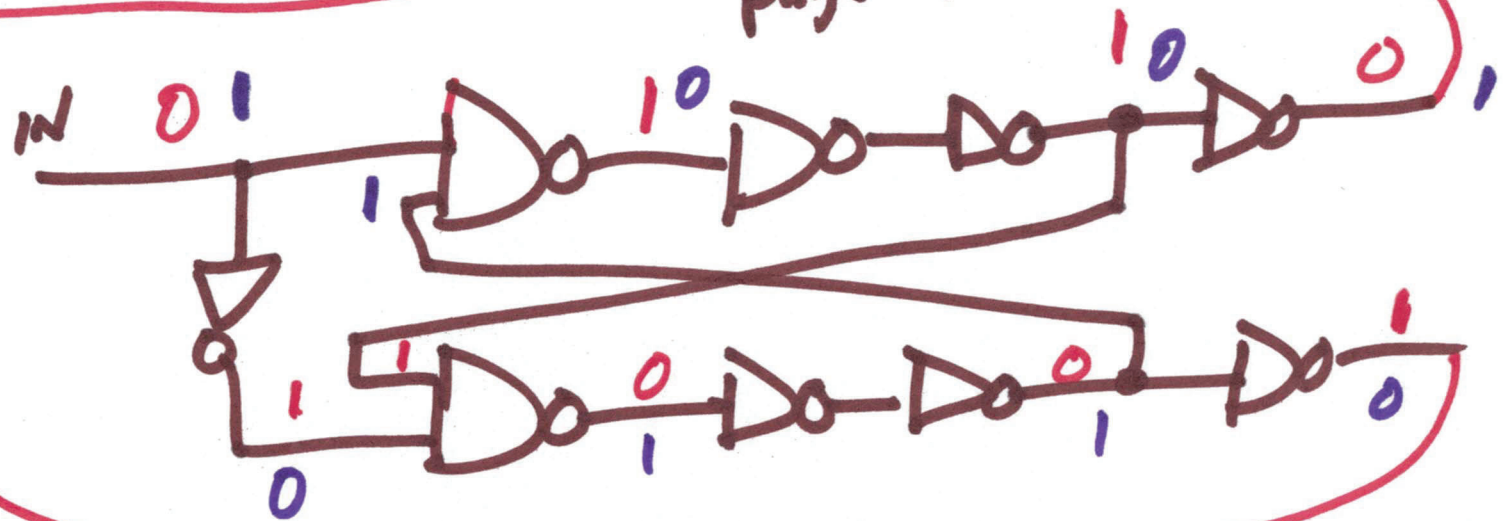
$$(1-D)$$



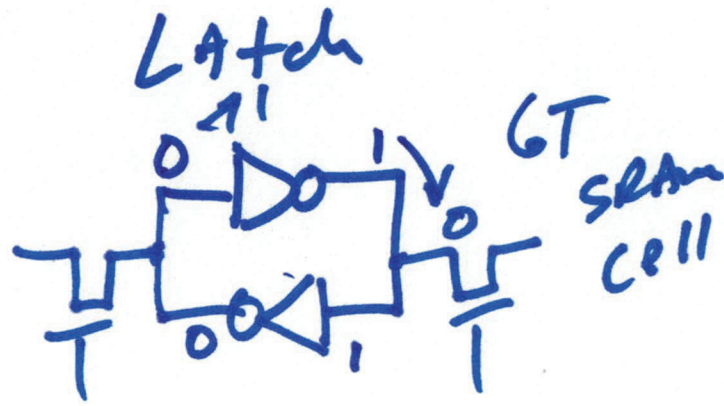
2)



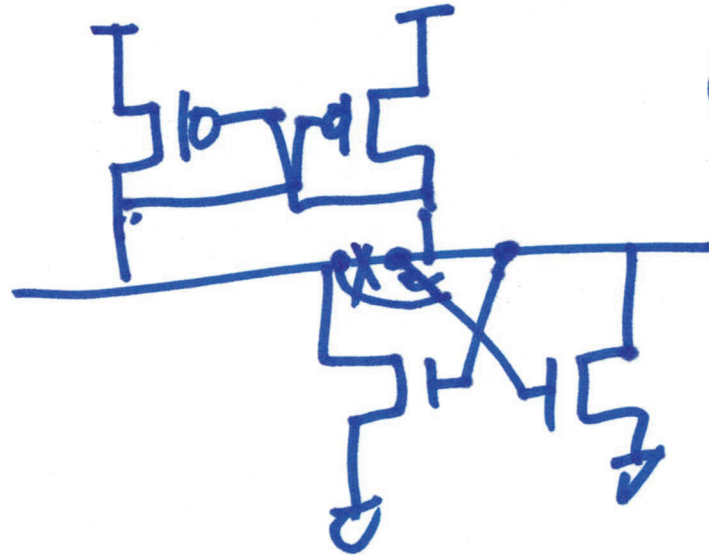
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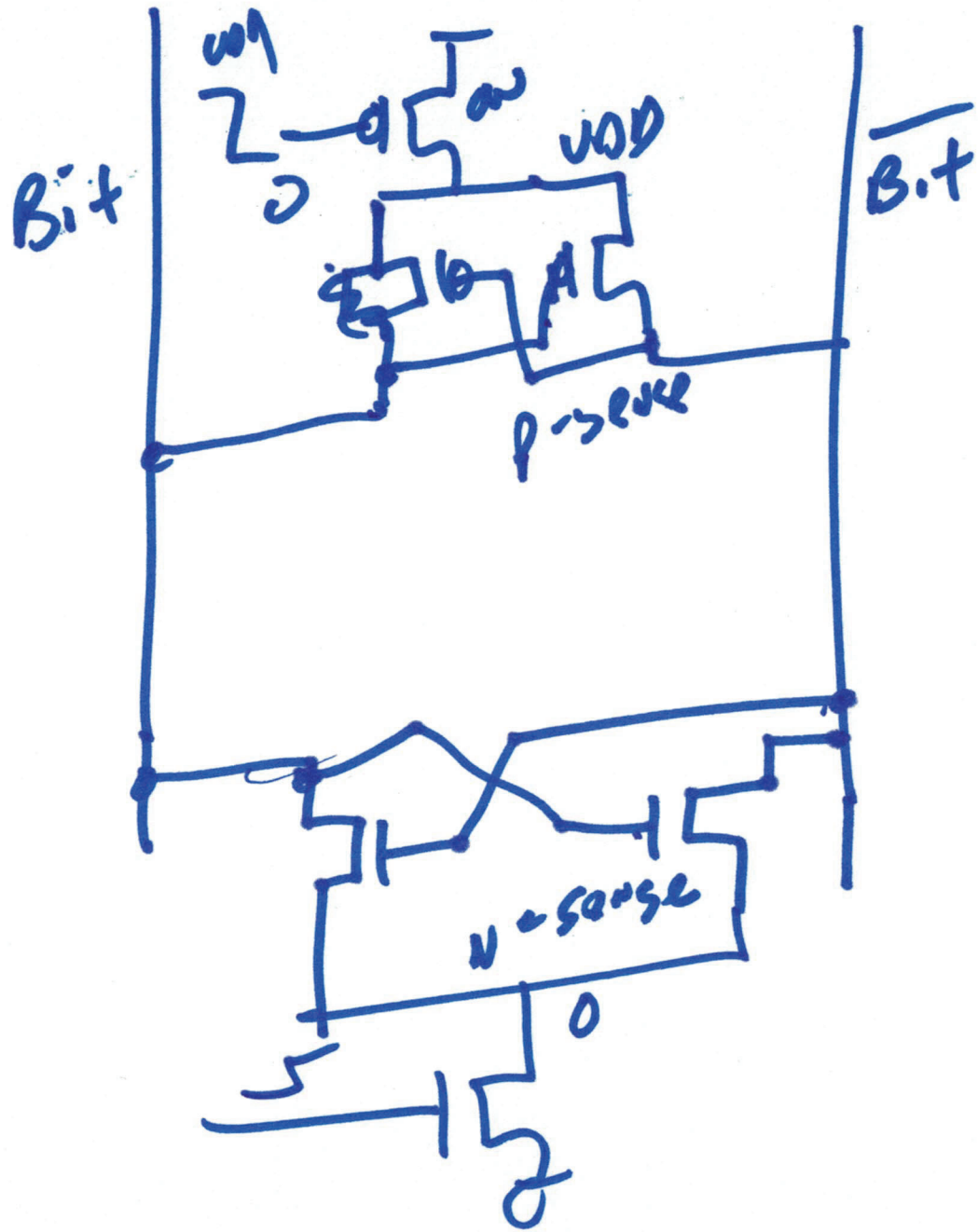


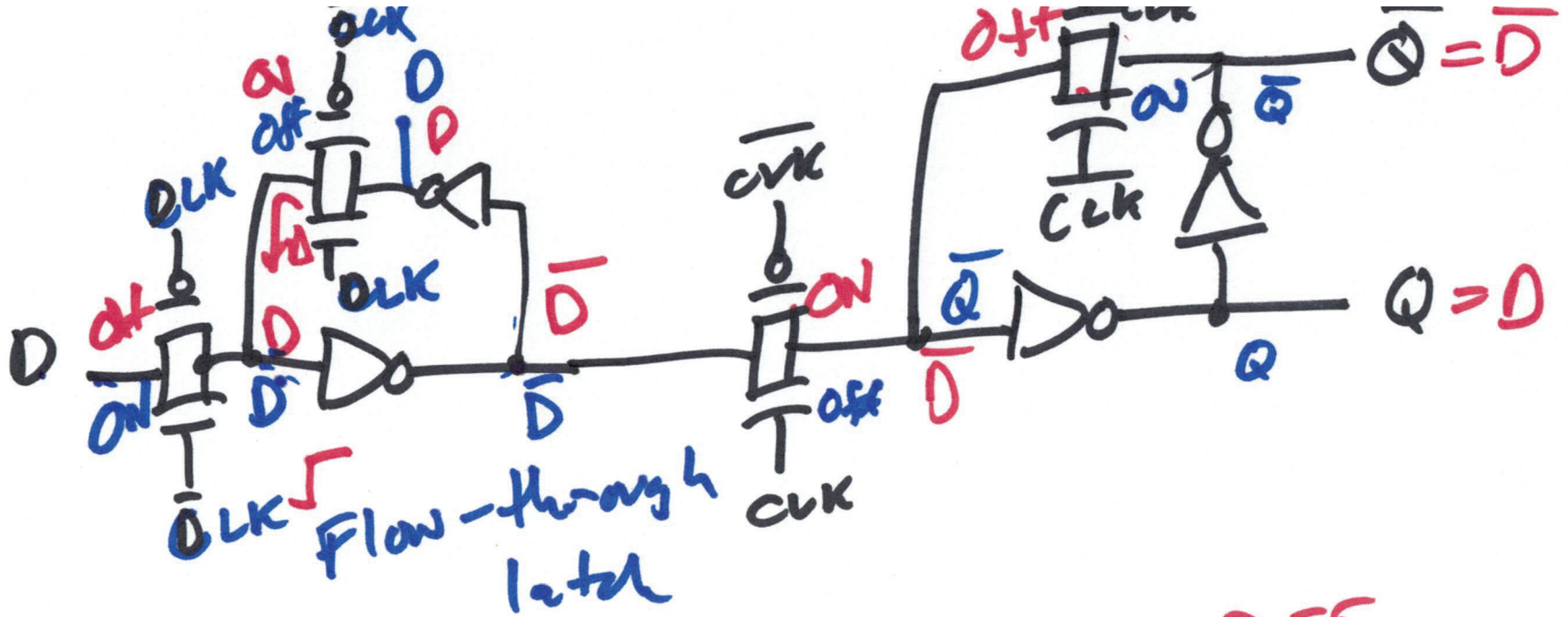




SRAM  
TACL  
AJC  
ADP  
TOS  
iNS  
y



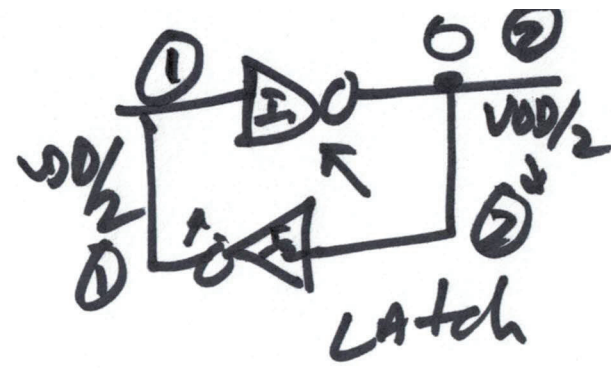
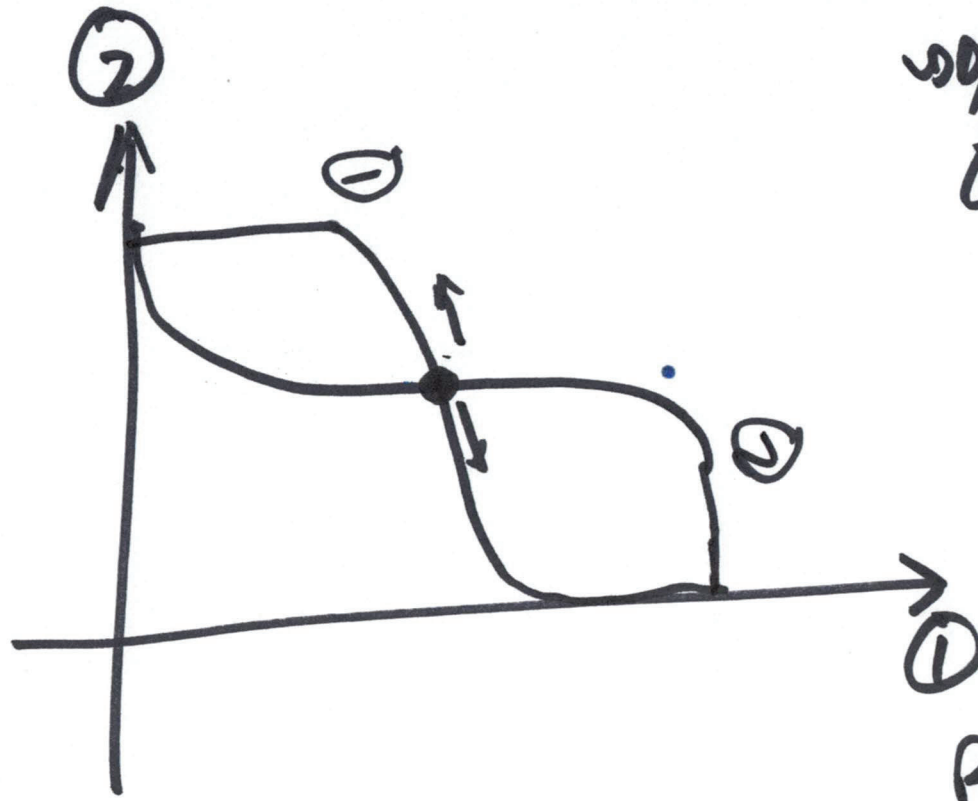




CLK  $\downarrow$  = 0  
 CLK = 1

Edge-triggered DFF  
 Register

$\overline{D}$   $\overline{D}$   $\overline{D}$  CLK



Butterfly curve

