

EE 421 / ECG 621

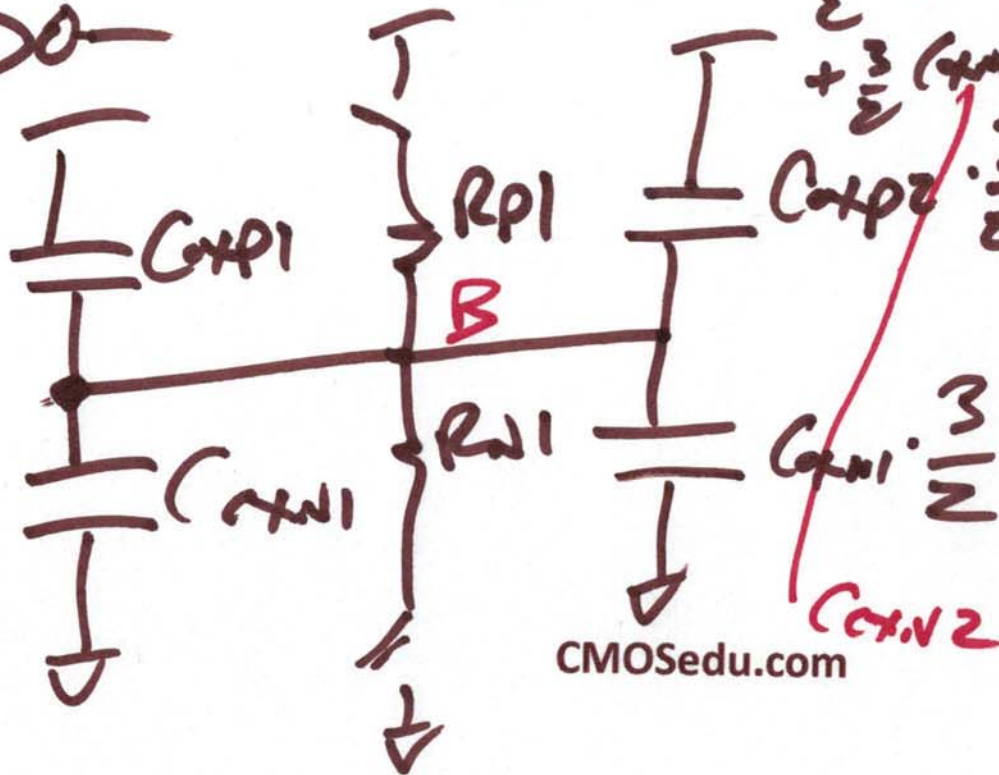
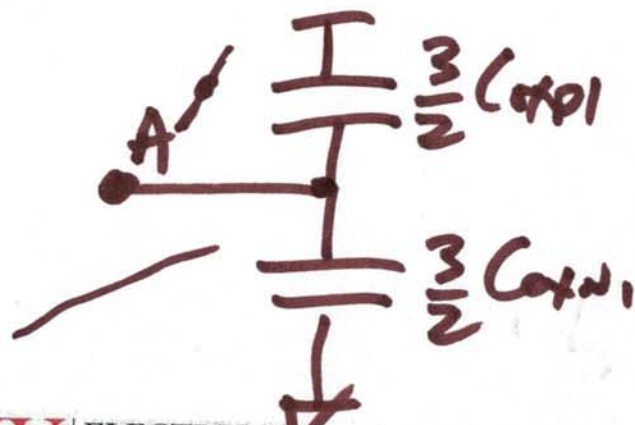
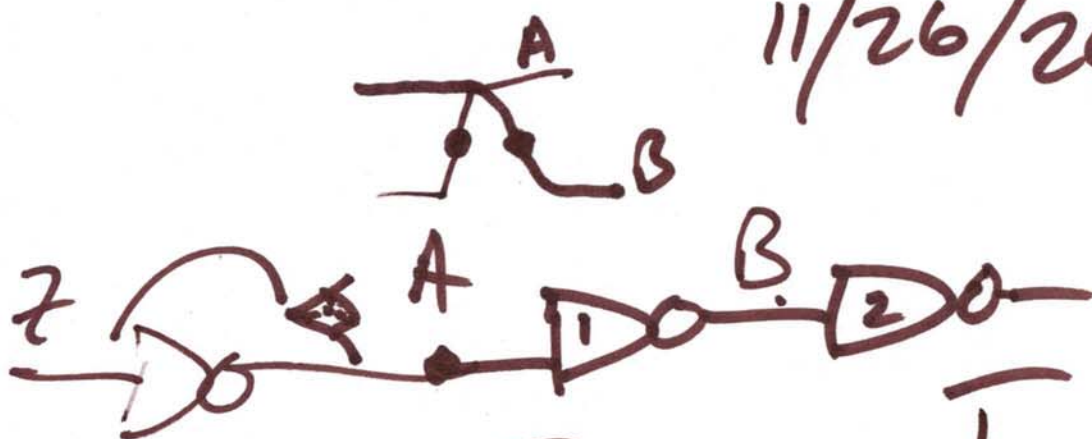
Digital IC Design

Lecture 24

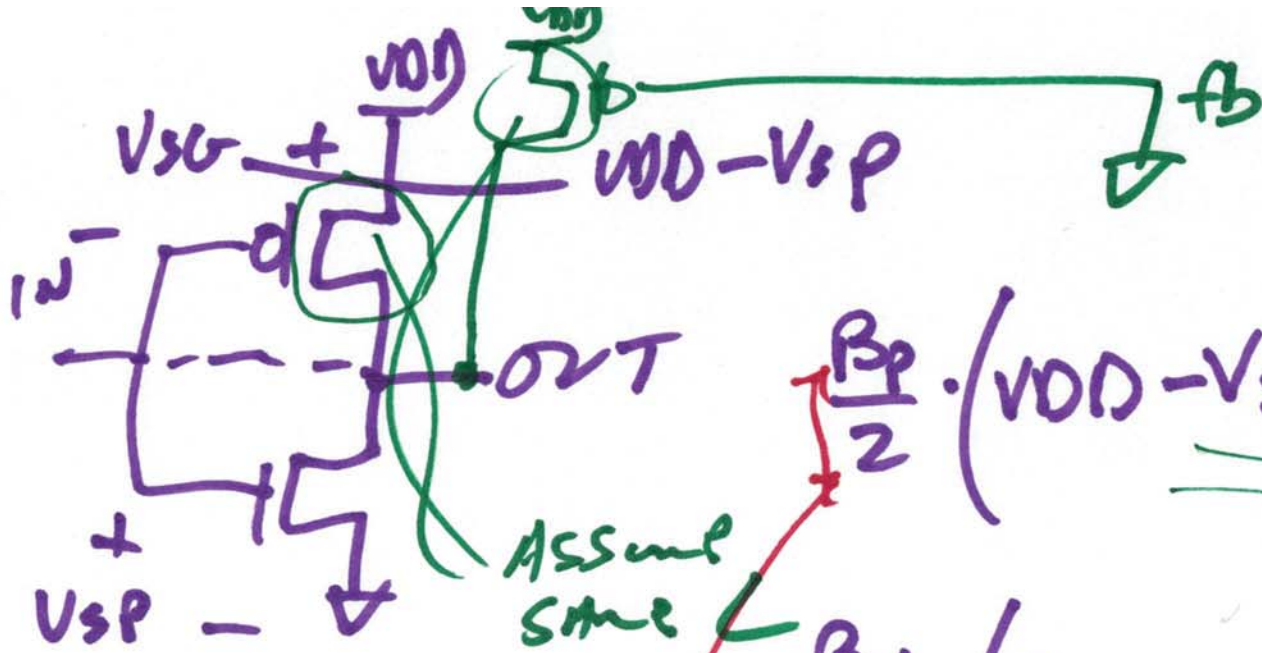
11/26/2018

$$t_{pIH} = 0.7 R_{p1}$$

$$(C_{ox1} + C_{oxn1} + \frac{1}{3} C_{oxp2} + \frac{1}{2} C_{oxn2})$$



1)



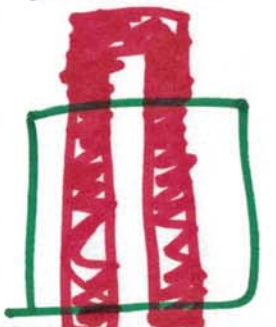
Assume same

$$\frac{\beta_p}{2} \cdot (\underbrace{V_{DD} - V_{SP}} - V_{THP})^2 =$$

$$\frac{\beta_n}{2} \cdot (\underbrace{V_{SP}} - V_{THN})^2$$

$$\beta_p = k_{p0} \cdot \frac{W_p}{L_p}$$

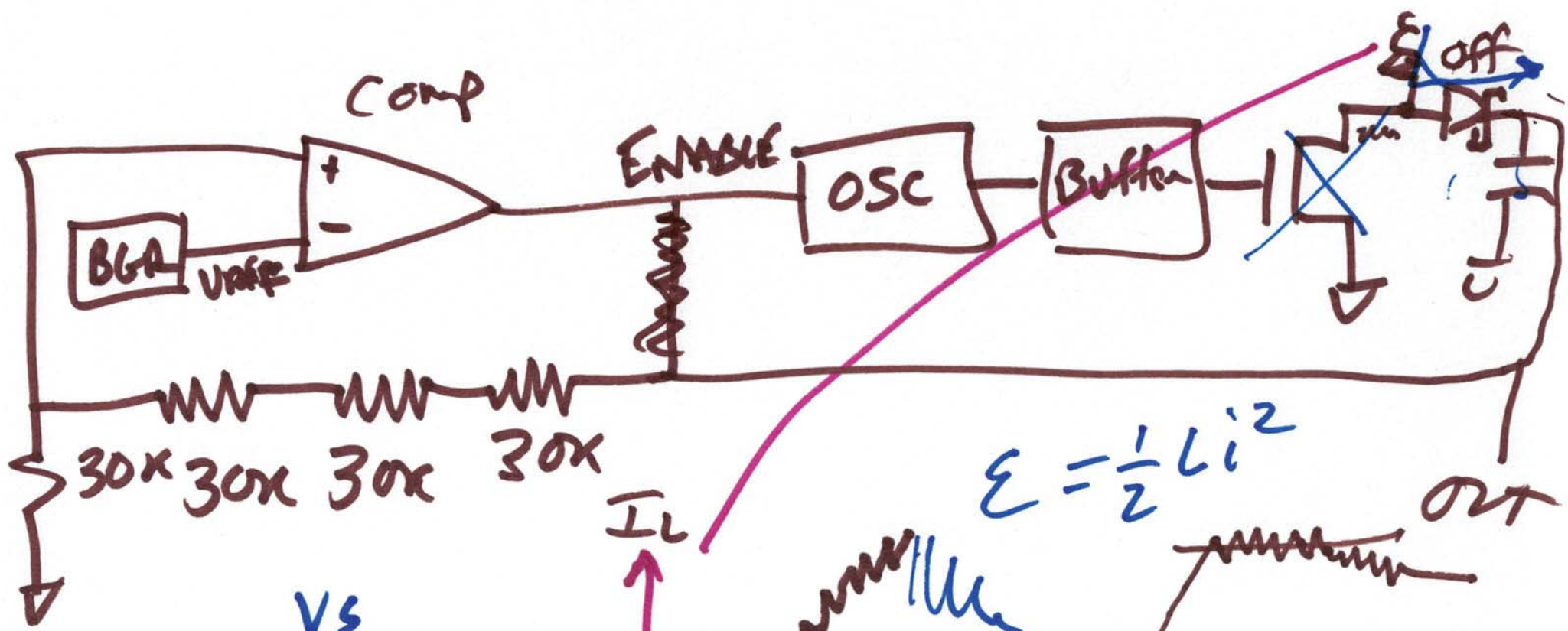
$$\beta_n = k_{n0} \cdot \frac{W_n}{L_n}$$



$$\frac{W_1 + W_2}{L}$$

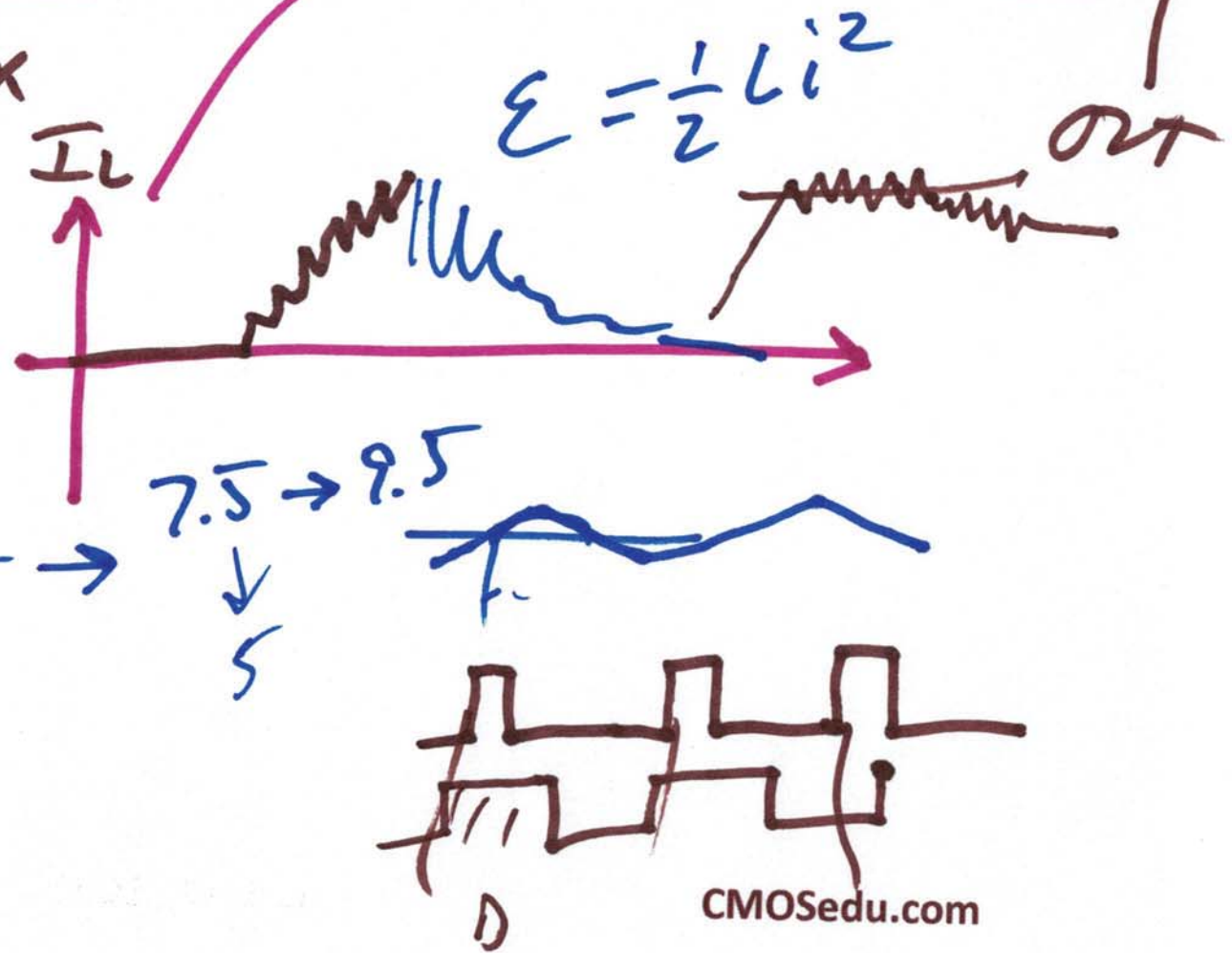
$$k_{p0} \cdot \left(\frac{W_p + W_{pHY}}{L_p} \right)$$

2)



$$V_{out} = \frac{V_s}{1-D}$$

$$= \frac{3.75 \rightarrow 4.75}{1 - \frac{1}{2}}$$

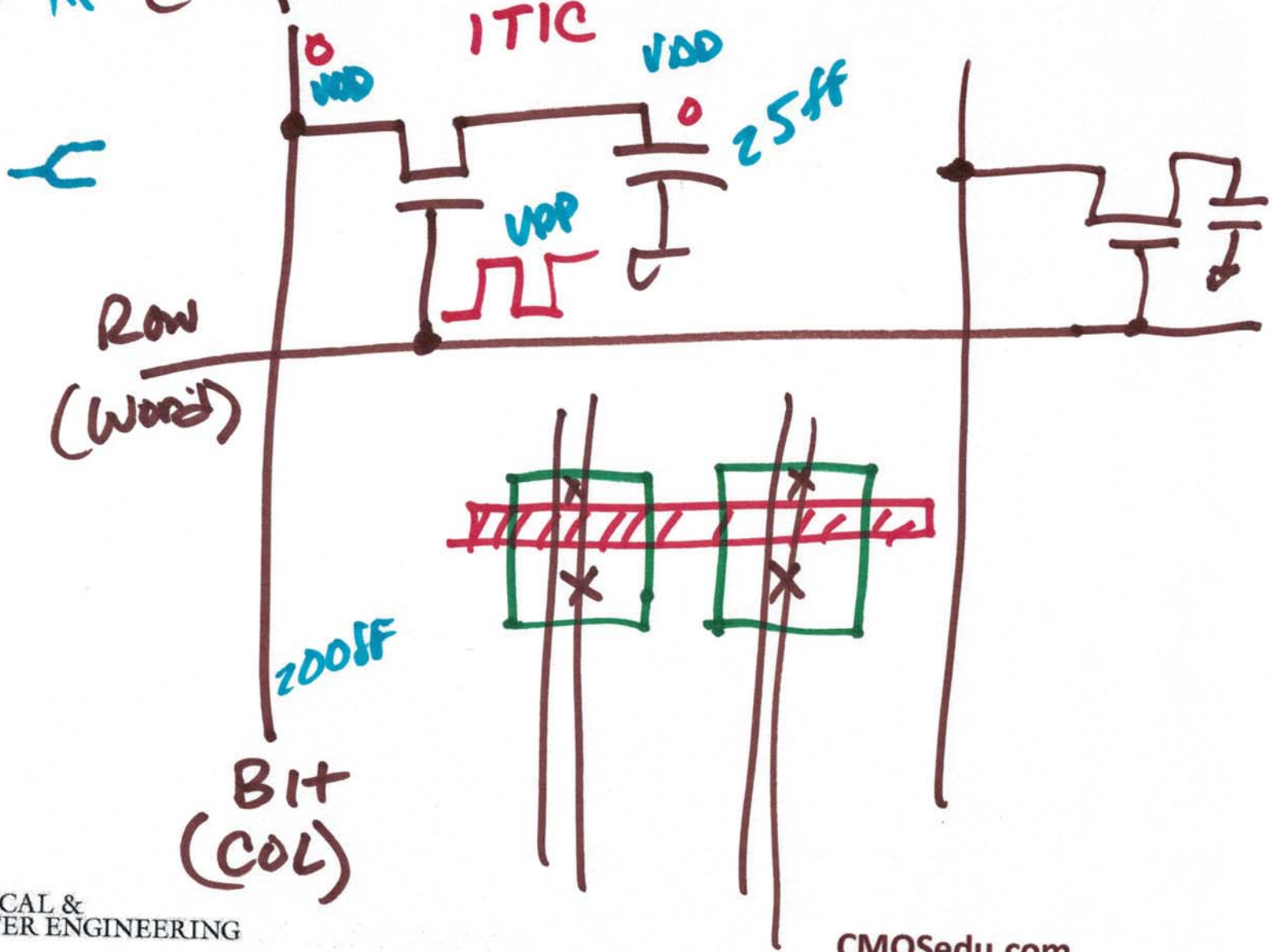


5)

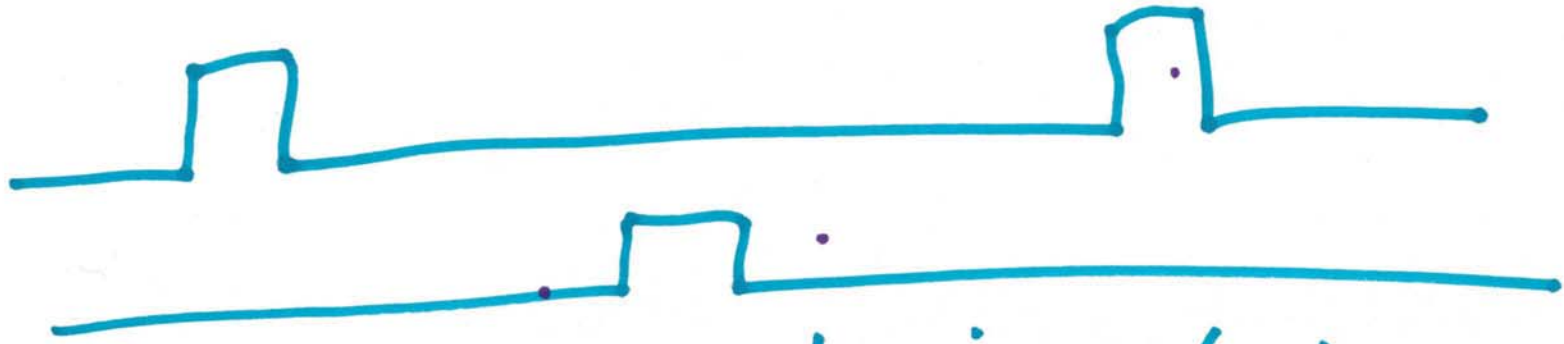
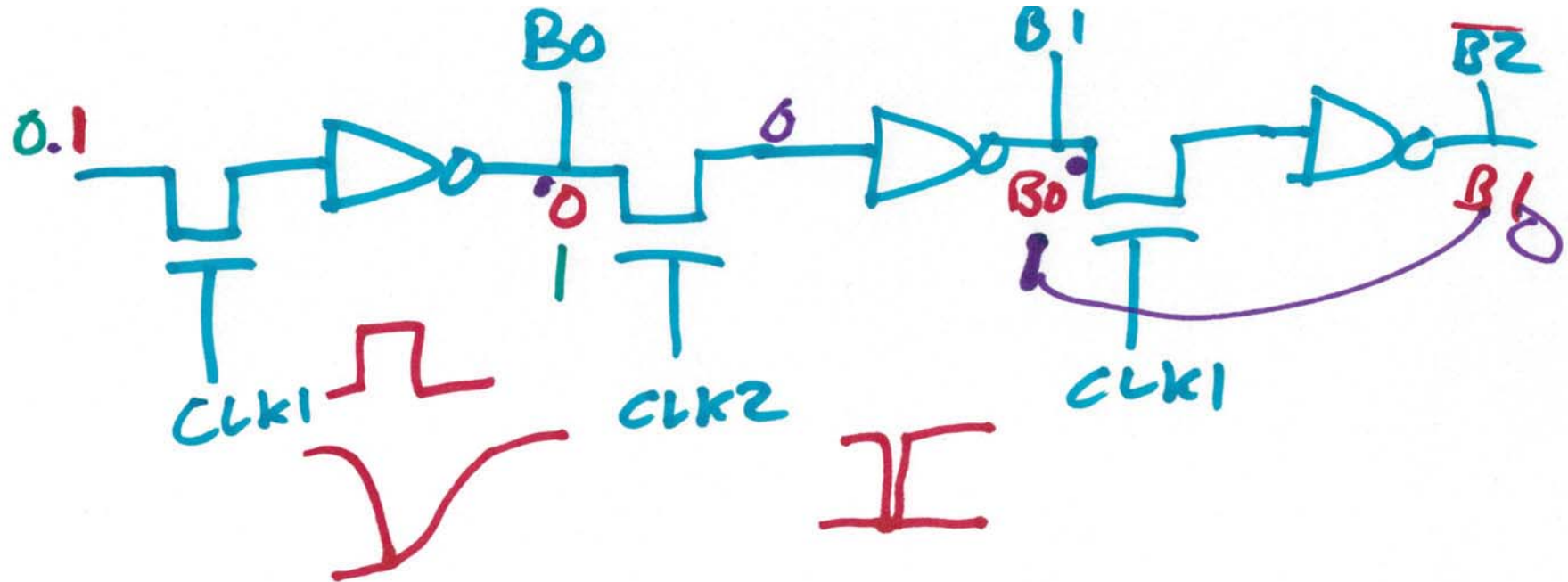
Dynamic Logic

4K bits
256K

Computer memory = DRAM



4)



non-overlapping clocks

Ser-Des

Serial-Deserial

5)