

2010 Qualifying Exam
Simon Wong

1. Sketch V_{out} .

Ans: final $V_{out} = 1.5 V_{DD}$

2. What is initial total stored energy ? What is final total stored energy ?

Ans: initial $E = CV_{DD}^2$; final $E = 1.25CV_{DD}^2$

3. If C can be varied, what is the maximum final V_{out} ?

Ans: $C_{left} \gg C_{right}$; maximum final $V_{out} = 2 V_{DD}$

4. Modify the circuit to achieve final $V_{out} = 3 V_{DD}$.

Many possible solutions including the following :

$C_{left} \gg C_{right}$; insert a diode between the 2 C , drive the bottom plate of the right C to V_{DD} .

