COE360 – Assignment # 3
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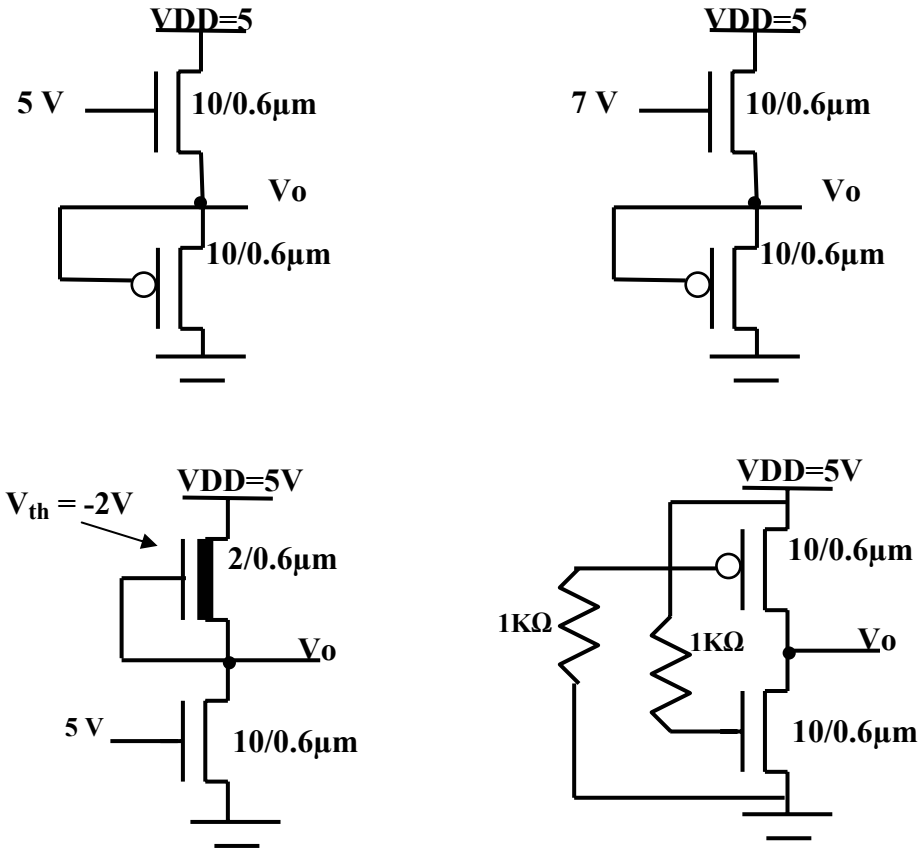
Q1) For the circuits shown, assume Vtn=|Vtp|=0.8V for the enhancement MOS, and make any other reasonable assumptions you need to find Vo. [5 marks]

Hint: In all circuits, the current through the top device equal that of the bottom one!
C_{ox} = 2 fF/μm^2 (i.e. 2E-7 F/cm^2), μ_n = 600 and μ_p = 300



Q2)

1. **Design an NMOS inverter using the 0.6μm, 5V technology (parameters above) with the following specifications: [5 marks]**

   VOH =5 V, VOL=0.05VDD and maximum input frequency of 250 MHz at a load capacitance of 100 fF.

2. **For your inverter, calculate:**
   a. **The noise margins,**
   b. **Average static power,**
   c. **and the input frequency at which the average dynamic power would equal the average static power**