ENEE 417 -Spring 2003
Week #7
Design #3: Ring Oscillator Circuit Designs: layout and use

In this experiment the CMOS inverter will be used for a ring oscillator design.
1 Design a three stage and a five stage ring oscillator. Run Spice simulations and then construct and test the circuit using the 4007 transistors. Use automated testing to control the circuit and to record the oscillations.

2. Insert equal capacitors between the stages and note the effects. Then insert one Super capacitor. Vary the bias voltage and see how the circuit operates in subtheshold.

3. Do a MAGIC layout for 1.6u transistors of a three stage and a five stage ring oscillator and do a Spice extraction to check your layout results versus a PSpice run used for design (for the 1.6u MOSIS transistors).

4. Insert your ring oscillator circuits into 1.6u pads. Prepare for a MOSIS submission (those who wish to have theirs fabricated may actually submit).

5. Write a one to two page report summarizing your study.

Reference:
CMOS inverters - any standard electronics textbook