LAB 3
Cascade MOSFET Amplifier

Objective:

This project will introduce you to the MOSFET Cascade Amplifier.

Introduction:

A cascade MOSFET amplifier consists of a common-source amplifier followed by a source-follower amplifier. The common-source amplifier provides a small-signal voltage gain and the source-follower has a low output impedance.

Materials:
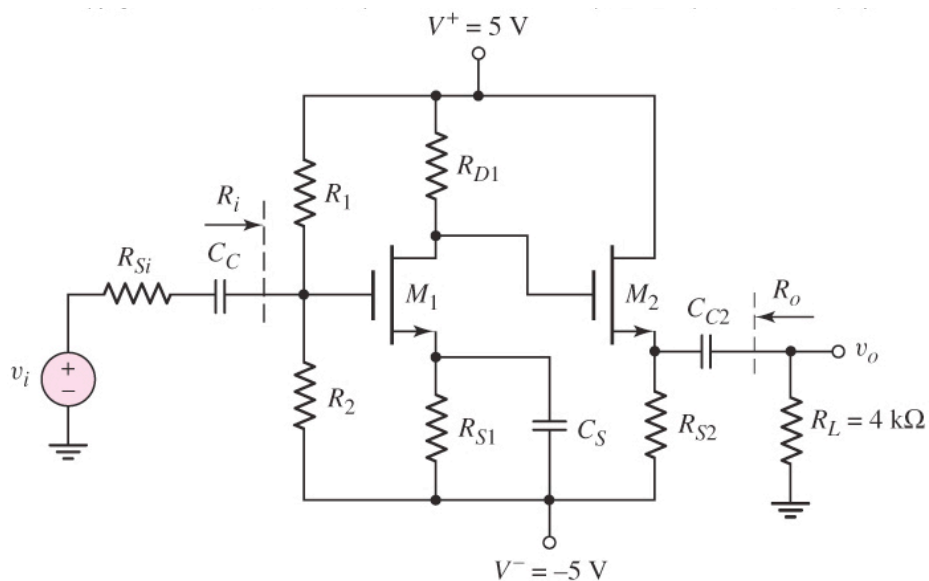
Various resistors

2 2N7000 NMOS transistors

3 100 μF capacitors

Breadboard

Procedure:

Given the following values, design, build, and implement the following Common Source Circuit in PSPICE. Submit the output file along with waveforms in your report.

$V_{TN1} = V_{TN2} = 2.236$ V, $k'_{n1} = k'_{n2} = 93.2174$ mA/V^2, $(W/L)_1 = (W/L)_2 = 1$, $I_{DQ1} = 0.2$ mA, $I_{DQ2} = 0.5$ mA, $V_{DSQ1} = V_{DSQ2} = 6$ V, $R_i = 100$ kΩ, $R_{Si} = 4$ kΩ, $\lambda = 0$ V^{-1}

Results:

Use an oscilloscope and function generator to demonstrate your circuit. $V_i = 10$ mV$_{pp}$.

Provide picture of input and output comparison for both your physical and PSPICE circuits.

Conclusions:

1. What did you learn from this lab?
2. If using a higher or lower input voltage what could you expect?
3. What are some real life applications of a cascade amplifier?
4. Describe any difficulties you had with this lab.

Note:

For lab reports be sure to include all calculations of resistor values, output resistance (R_o), and Gain (A_v). Be sure to show your work.

Submit via WebCT Vista as a pdf (lastname_firstname_lab3.pdf). Google how to if you don't know how to make a pdf.