Lab 11 Report

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Objective:

The purpose of this lab is to examine the properties of the MOS amplifier configurations. DC operating point, voltage gain, and input and output impedances of common-source and common-drain topologies will be studied.

Introduction:

First, we build the circuits in Multisim to give us a rough estimation on what the values should be. Then, we go through and build each circuit based on the values of the resistances that we calculated, and measure the input and output voltages. To measure this, we look at the transient responses of each circuit as well as using the voltmeter function of the analog discovery 2 to find the voltage drop across resistors.

Calculations

Simulation Plots

Experimental Plots

Conclusion:

My calculations were a little off from my simulations. However, this can be attributed to some of the equations being only approximations. This biggest reason for this is the Beta value calculated for the 2n7000 transistor in the last lab. This was the basis for many of the resistance values calculated and therefore would throw many of the calculations off. The simulation values were different from my experimental measurements. This is definitely attributed to me not being able to use the exact calculated resistance values. Many of my resistance values were off by 300 Ohms, which threw off many of the voltage readings as well as other readings from the circuit. I’m confident, however, that if I was able to use the exact same resistance values, my simulation and experimental measurements would be much closer together.