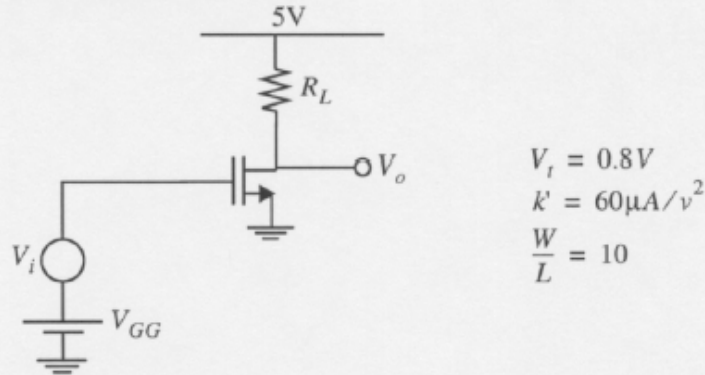


UNIVERSITY OF CALIFORNIA
College of Engineering
Department of Electrical Engineering
and Computer Sciences

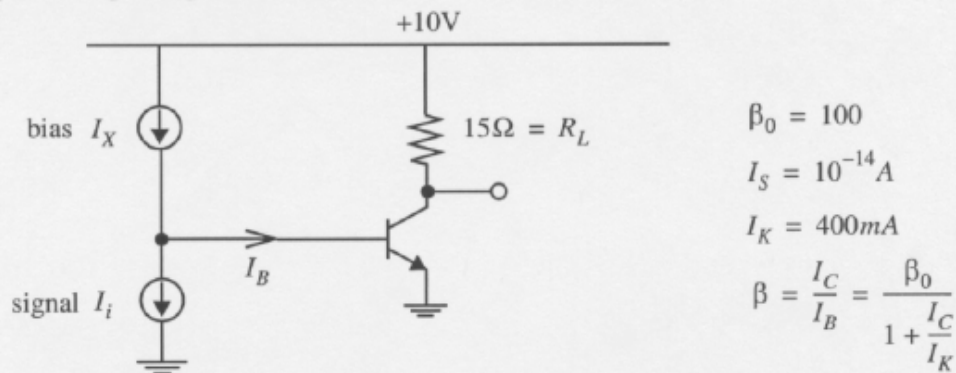
Example Problem Set 2

EECS 142

1. A MOSFET gain stage is shown below.



- a) Choose V_{GG} and R_L for a bias current of $300\mu A$ and a small-signal voltage gain of 3.
 - b) Use SPICE to plot out the large signal transfer characteristic for signal input V_i between $\pm 2V$. Verify (a).
 - c) Calculate HD_2 and HD_3 in V_o for a sinusoidal output voltage of 0-peak amplitude of 300 mV and also calculate the output voltage bias point shift. Verify with SPICE.
2. A power output stage is shown below.



- a) Choose I_X for a bias current $I_{CQ} = 200mA$.
- b) Express I_C as a function of I_B . Thus derive a power series linking $(I_C - I_{CQ})$ and I_i . Thus calculate the maximum average sinusoidal signal power which can be delivered to R_L for $HD_2 \leq 5\%$. Verify with SPICE.