

Homework Assignment No. 8

Due March 7, 2005 in class

Problem 1 - (10 points)

Problem 6.5-15 of AH

Problem 2 – (10 points)

Problem 6.28 of GHLM

Problem 3 – (10 points)

Problem 6.29 of GHLM

Problem 4 – (10 points)

Problem 6.30 of GHLM

Problem 5 – (10 points)

A two-stage, BiCMOS op amp is shown. For the PMOS transistors, the model parameters are $K_P' = 50 \mu\text{A}/\text{V}^2$, $V_{TP} = -0.7\text{V}$ and $\mu_p = 0.05\text{V}^{-1}$. For the NPN BJTs, the model parameters are $\beta_F = 100$, $V_{CE}(\text{sat}) = 0.2\text{V}$, $V_A = 25\text{V}$, $V_t = 26\text{mV}$, $I_s = 10\text{fA}$ and $n=1$. (a.) Identify which input is positive and which input is negative. (b.) Find the numerical values of differential voltage gain, $A_v(0)$, GB (in Hertz), the slew rate, SR , and the location of the RHP zero. (c.) Find the numerical value of the maximum and minimum input common mode voltages.

