EE210A: Microelectronics I - Mini-Quiz 5

NAME (in capital)	Roll No

Time: 15 minutes

1) : Consider $\mu_n C_{ox} = 200\mu A/V^2$, $I_0 = 4mA$, $V_{tn} = 1V$, $V_B = 2.5V$.

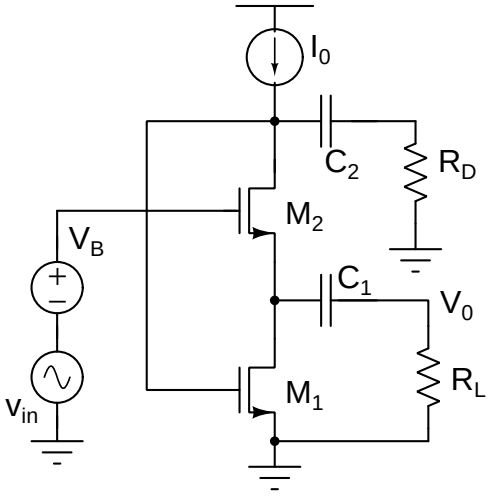

Fig. 1. Problem 1

a) : Size $M1$ and $M2$ such that under quiescent conditions $M1$ is in saturation with a margin of 200 mV, and $M2$ is in saturation with a margin of 500 mV. **[4]**

Same as Sol A

$\left(\frac{W}{L}\right)_1 = 40$ $\left(\frac{W}{L}\right)_2 = \frac{40}{0.09}$

b) : Find v_0 if $v_{in} = V_p \sin(\omega_0 t)$, $R_L = 1k\Omega$ and $R_D = 10k\Omega$. Assume C_1 and C_2 are large enough to be treated as a short circuit at ω_0. Find the total currents through $M1$, $M2$ and R_L if $V_p = 10mV$ and v_{in} is at its maxima. **[6]**

Expression same as Set A