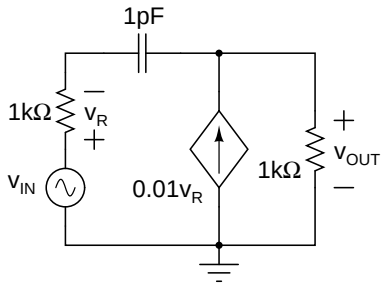
NAME: STUDENT NO.:

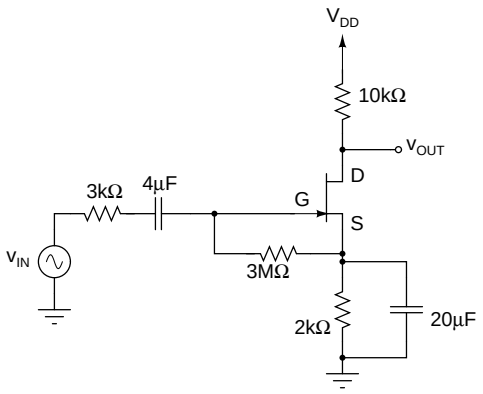
University of Puerto Rico
Electrical and Computer Engineering Department
INEL 4202 - Electronics II - Spring 2000 - Exam 2 - Prof. M. Toledo
THERE ARE FOUR PROBLEMS - BE CLEAR OR LOOSE POINTS

1. Use the open-circuit time constant method to estimate the high-frequency pole for the following circuit. Do not use the Miller approximation. (25 pts)



NAME: STUDENT NO.:

2. Use the short circuit time constant method to estimate the dominant low-frequency pole for the circuit below. The transistor has $g_m = 5.6 \times 10^{-3}$ A/V. (25 pts)

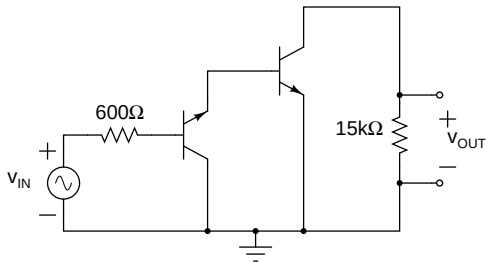


NAME: STUDENT NO.:

3. The circuit shown below has identical transistors biased at 0.5 mA. Parameters are $r_b = 120\Omega$, $r_\pi = 15k\Omega$, $V_A = 180V$, $C_\pi = 40pF$ and $C_\mu = 4pF$.

   (a) Draw the high-frequency equivalent circuit. (10 pts)

   (b) Determine the upper half-power frequency for the amplifier. (25 pts)



NAME: STUDENT NO.:

4. Estimate the mid-band gain and write down an expression for the gain as a function of frequency for the transistor amplifier shown below. Use $g_m = 10mA/V$ and $C_{gs} = C_{gd} = 4pF$. (15 pts)