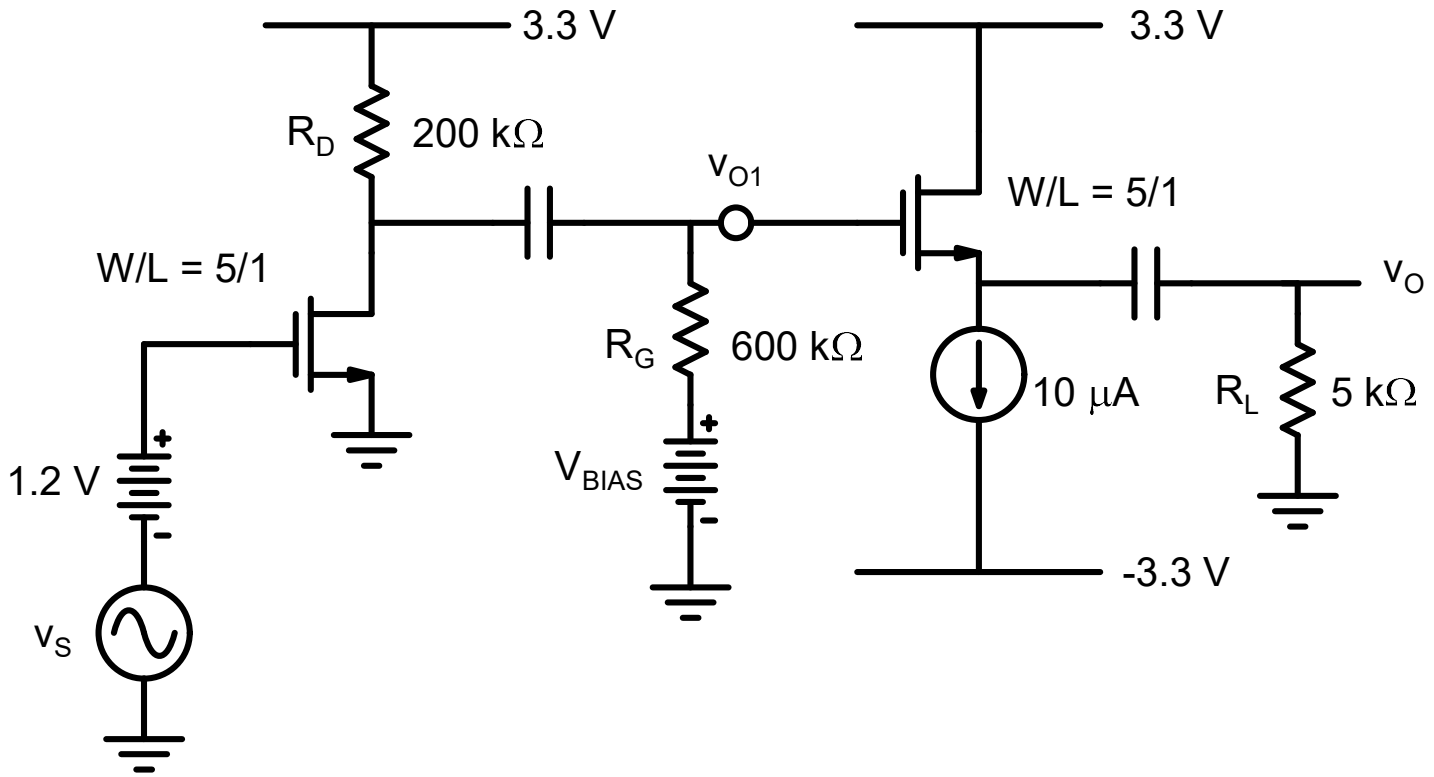
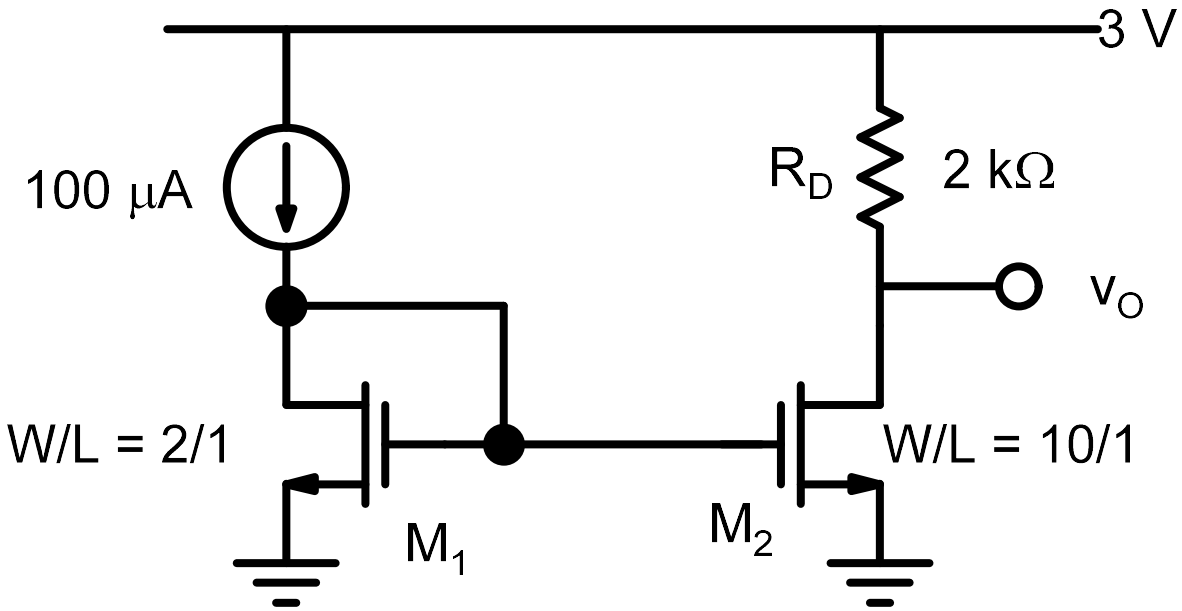
ESC201T : Introduction to Electronics

END-Sem Exam –part B(19/12/2020) (Note there are 4-pages) Time : 9.45AM-10.55AM.

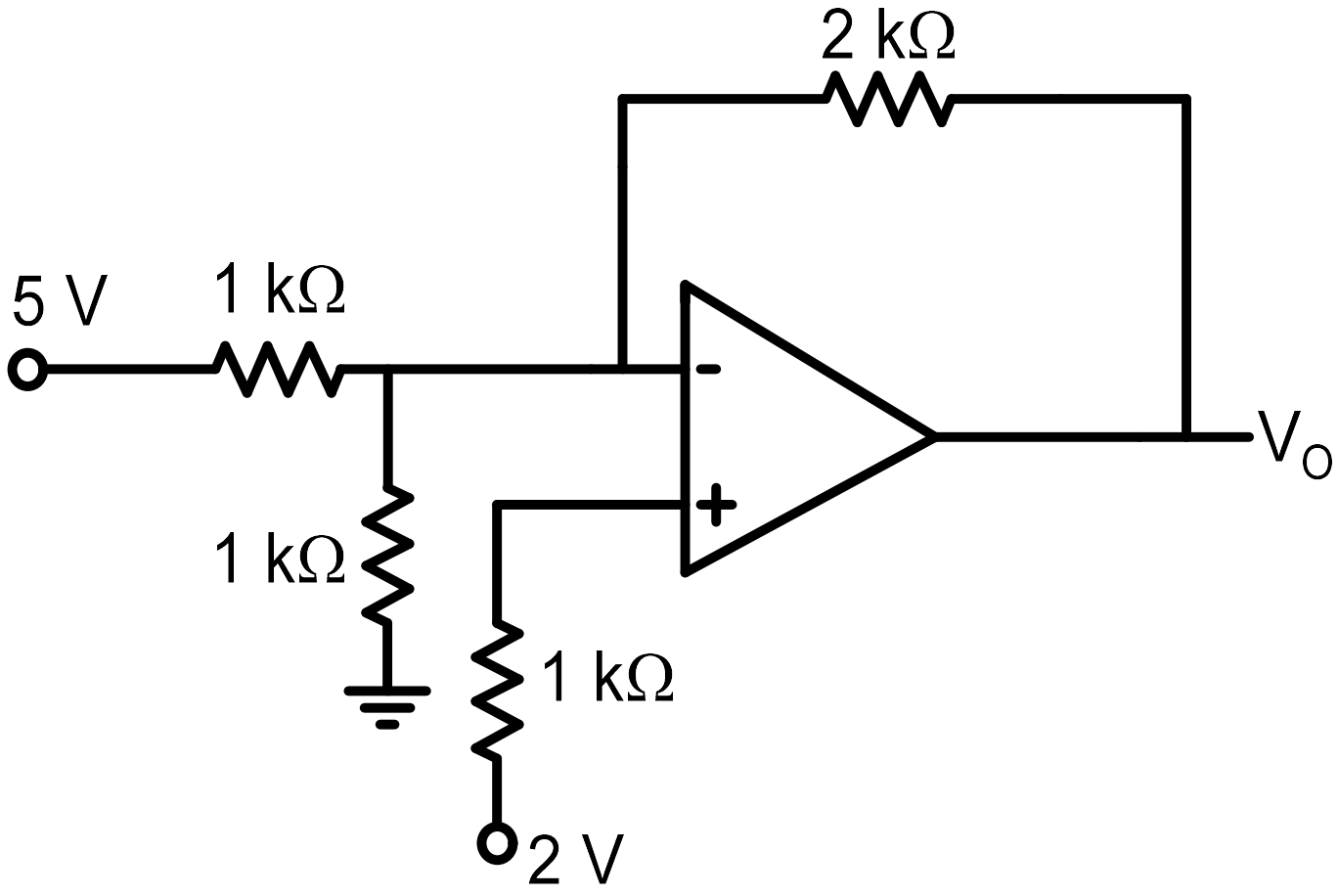
QB-3 Determine the ac voltage gain $\frac{v_{O1}}{v_S}$ and $\frac{v_O}{v_S}$ in the amplifier circuit shown below. Assume that MOSFETs are biased in saturation mode and that KPN = 100 x 10^{-6} A/V^2 and V_{THN} = 1V for both MOSFETs. Show all relevant steps and justify your assumptions. ----6Marks



QB-4 Determine the output voltage V_O in the circuit shown below assuming that MOSFET is biased in saturation mode and that KPN = 100 x 10^{-6} A/V^2 and V_{THN} = 1V for both the MOSFETs ----3Marks



QB-5 Determine the output voltage V_O in the circuit shown below assuming that opamp is ideal. Show steps of your analysis ----3Marks



QB-6 In the ideal opamp circuit shown below, determine the magnitude of the sinusoidal output voltage. Assume that sinusoidal steady state conditions prevail. ----3Marks