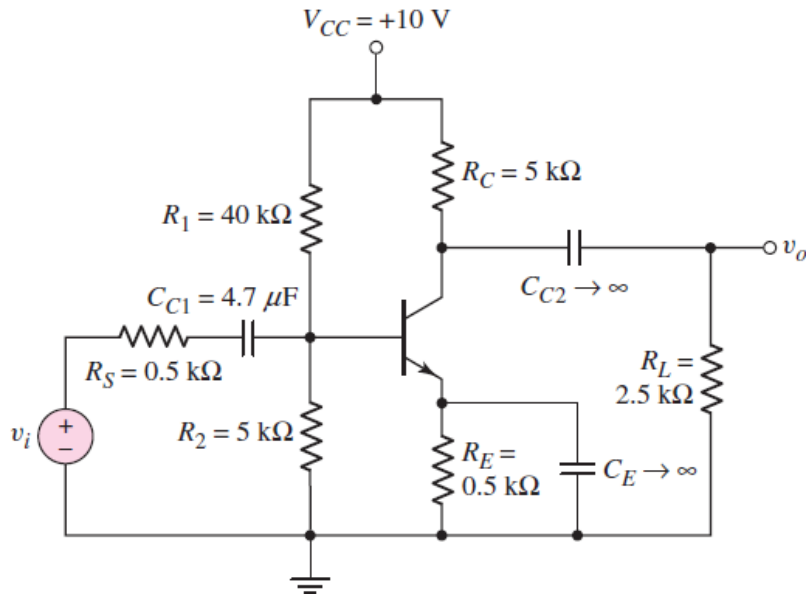


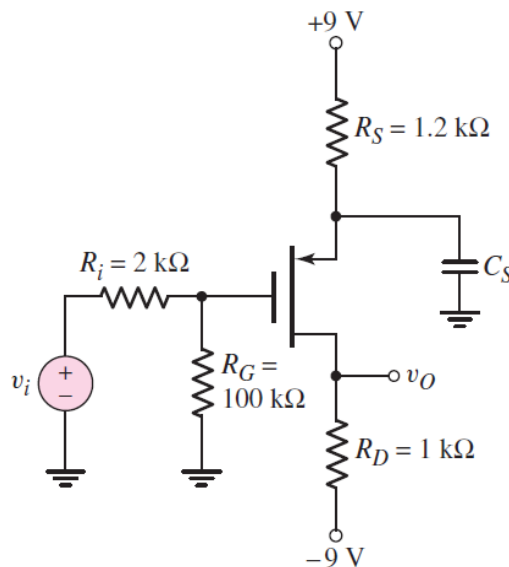
Electronics II, Exam-1, Spring 2023
 Department of Communication Engineering, National Central University
 17th March, 2023, Prof. Dah-Chung Chang (E1-311)

Note: The scientific calculator is allowed in all Electronics II exams.

1. (40%) The transistor parameters are $\beta = 120$, $V_{BE}(on) = 0.7V$, $V_A = \infty$, $C_{\mu} = 3pF$, and $f_T = 250MHz$.
- Determine the lower 3dB frequency. (15%)
 - Determine the upper 3dB frequency. (15%)
 - Find the midband voltage gain. (10%)



2. (25%) The transistor parameters are $V_{TP} = -2V$, $K_p = 2mA/V^2$, $\lambda = 0.01V^{-1}$, $C_{gs} = 10pF$, and $C_{gd} = 1pF$.
- Determine the upper 3dB frequency. (15%)
 - Find the midband voltage gain. (10%)



3. (35%) The transistor parameters are $\beta = 100$, $V_{BE(on)} = 0.7V$, $V_A = \infty$, $C_\pi = 24 pF$, and $C_\mu = 3 pF$.
- Determine the upper 3dB frequencies corresponding to the input and output portions of the equivalent circuit. (20%)
 - Find the midband voltage gain. (15%)

