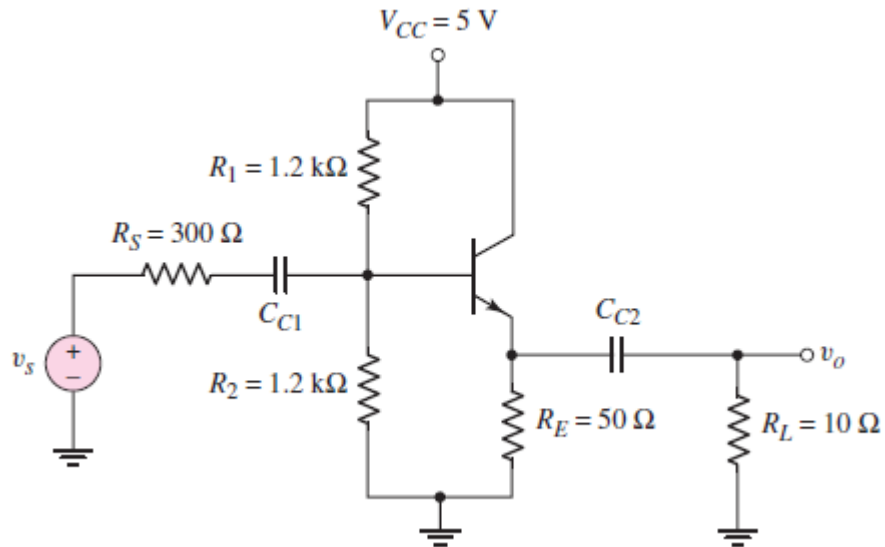


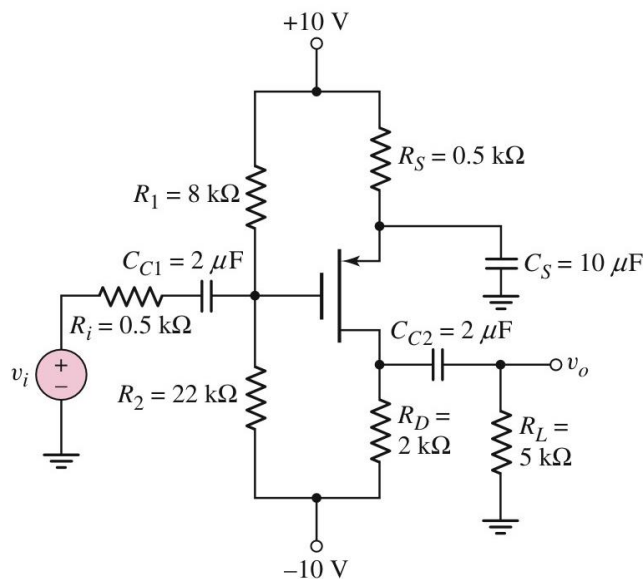
Electronics II, Exam-1, Spring 2022
 Department of Communication Engineering, National Central University
 25th March, 2022, Prof. Dah-Chung Chang (E1-311)

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

1. (35%) The transistor parameters are $\beta = 100$, $V_{BE(on)} = 0.7V$, $V_A = \infty$. The time constant associated with C_{C1} is a factor of 100 larger than the time constant associated with C_{C2} .
- (a) Determine C_{C2} such that the -3dB frequency associated with this capacitor is 25Hz. (20%)
- (b) Determine C_{C1} . (15%)

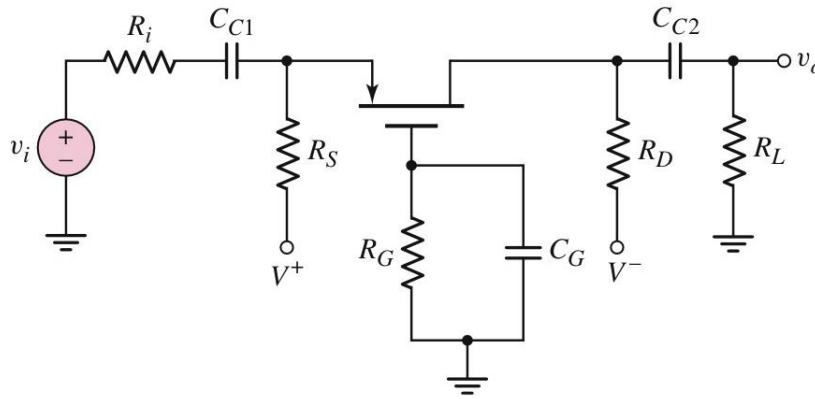


2. (30%) The transistor parameters are $V_{TP} = -2V$, $K_p = 1mA/V^2$, $\lambda = 0$, $C_{gs} = 15pF$, and $C_{gd} = 3pF$.
- (a) Determine the upper 3dB frequency. (20%)
- (b) Find the midband voltage gain. (10%)



3. (35%) Let $V^+ = 5V, V^- = -5V, R_S = 4k\Omega, R_D = 2k\Omega, R_L = 4k\Omega, R_G = 50k\Omega$, and $R_i = 0.5k\Omega$. The transistor parameters are $K_p = 1mA/V^2, V_{TP} = -0.8V, \lambda = 0, C_{gs} = 4pF$, and $C_{gd} = 1pF$.

- (a) Determine the upper 3dB frequency. (20%)
 (b) Find the midband voltage gain. (15%)



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