PROBLEM SET #8

Issued: Friday, October 19, 2018

Due: Friday, October 26, 2018 at 12:00 noon via **Gradescope**.

1. Sedra & Smith, Problem 7.38
2. Sedra & Smith, Problem 7.58
3. Sedra & Smith, Problem 10.16
4. Sedra & Smith, Problem 10.17
5. Sedra & Smith, Problem 10.25
6. a) Find the Q-point for the amplifier in Figure PS8.1. $V_A = 100V, \beta_F = 100, V_{cc} = +12V, V_{EE} = -12V, R_s = 1k\Omega, R_1 = 10k\Omega, R_2 = 5k\Omega, R_3 = 24k\Omega, R_E = 4k\Omega, R_C = 6k\Omega$ and $R_F = 100M\Omega$. Assume all the capacitors have infinite capacitance. b) Determine the gain $\frac{v_o}{v_s}$. (Hint: Make proper approximation).
7. Figure PS8.1 shows a CE amplifier with a feedback resistor R_F $V_A = 100V, \beta_F = 100, V_{cc} = 12V, V_{EE} = -12V, R_s = 1k\Omega, R_1 = 10k\Omega, R_2 = 5k\Omega, R_3 = 24k\Omega, R_E = 4k\Omega, R_C = 6k\Omega, R_F = 10k\Omega$. Assume all the capacitors have infinite capacitance. Determine the gain $\frac{v_o}{v_s}$.
8. A BJT with $C_{\mu 0} = 2pF$ is biased at a Q-point of (2mA, 5V). What is the forward-transit time τ_F if $f_T = 500MHz$, $\phi_{jc} = 0.9V$, and $C_{je} = 7pF$?

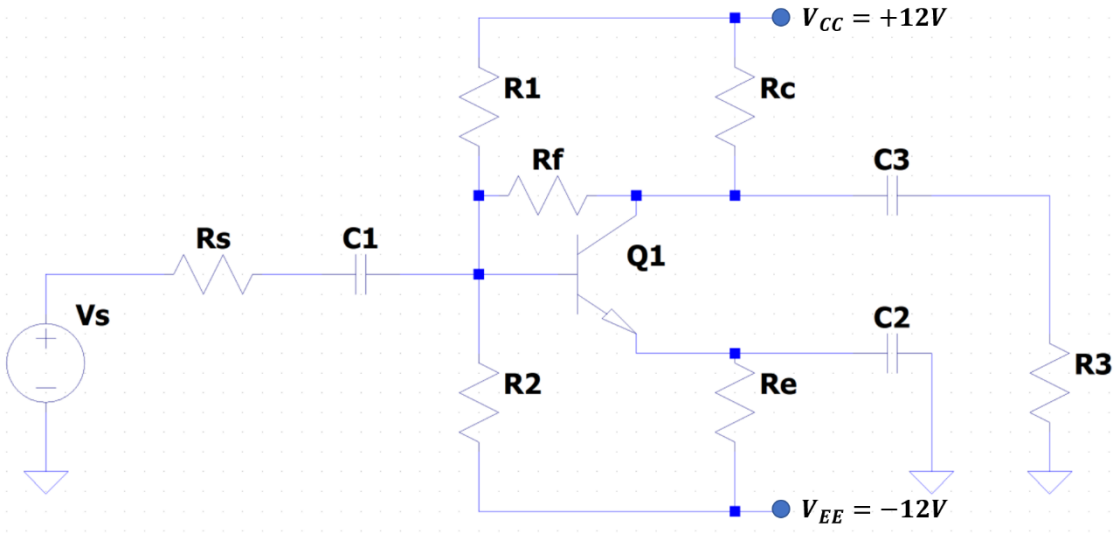

Figure PS8.1