ELEC301 Homework Set #4 P. 1

1) For the circuit shown in figure 1, find I_1, I_2, I_C, I_E, g_m, and r_π.

2) For the circuit shown in figure 2, find A_M, ω_{3dBL}, and ω_{3dBH} given that $\beta = 100$ and that the hybrid- model has the following parameters $c_\pi = 10pF$, $c_\mu = 2pF$, and $r_o = \infty$.

3) For the circuit shown in figure 3:
   i. Draw the low frequency circuit, the mid band circuit and the high frequency circuit and
   ii. Derive the mid band gain, A_M, and $F_L(s)$.

4) For the circuit shown in figure 4, use the 1/3rd rule (your choice) to bias the circuit and find C_E, C_{CI}, and C_{C2} that will put the low frequency poles at 1000/s, 100/s and 10/s. Choose the lowest cost combination of capacitors.
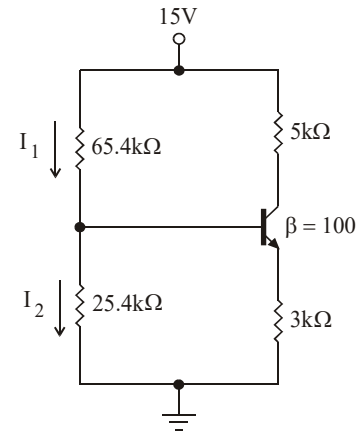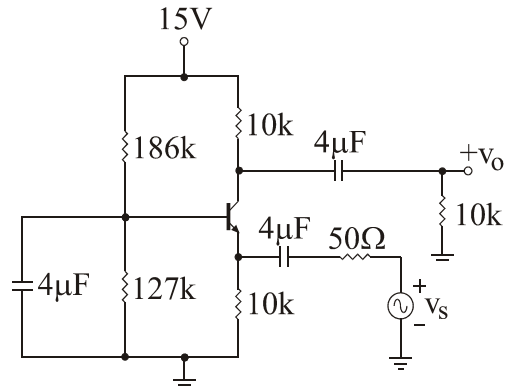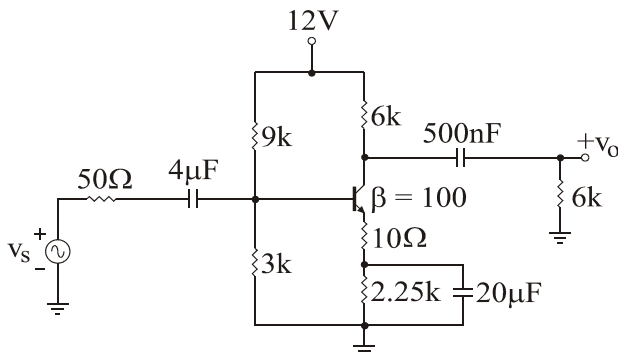

Figure 1.

Figure 2.

Figure 3.
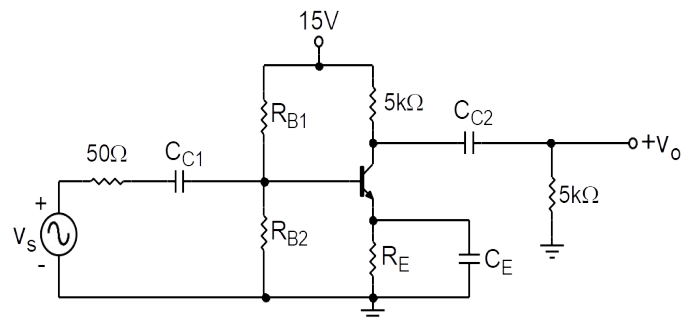

Figure 4.