20 point graded homework assignment

Part 1:

2 page writing assignment. Write 2 pages of text in English, describing the three basic bipolar transistor circuits: Common Emitter, Common Collector, and Common Base circuits. Then discuss a simple model for the bipolar transistor using a 0.6 volt ideal diode, controlled current source, and re. Include a discussion of gm and 1/gm, how to set them for specific values, and their importance in bipolar transistor circuits. Discuss separating the ac signal and dc circuits using dc blocking capacitors. Then describe how each of the dc blocking capacitors sets frequency response.

Part 2:

Design a Common emitter amplifier with a gain of 20 and a load resistor of 5.6k that draws 2 mA from the power supply. You may choose any supply voltage that works--note that the voltage drop across the load resistor is a significant constraint. Use the four resistor bias circuit, and design the amplifier for signals at 100 Hz and above. Include enough details in your description that a classmate could build and measure the amplifier in the Tektronix lab using standard components.

Lecture this week will focus on the techniques needed to successfully complete the graded homework assignment.

The writing part of the homework assignment is a first draft of the final 2 page report that will be turned in with the final exam. As with your Common Emitter amplifier design, the writing assignment should be clearly understandable by a classmate and useful for understanding basic bipolar transistor circuits.

You are expected to do your own writing and design your own amplifier, but you are encouraged to compare your work with classmates before submitting it on the due date. It is not necessary to simulate or build your design.

Homework--Quiz 3

Homework 3 is a 20 point graded assignment, due in class on Tuesday December 1. It includes the draft of a writing assignment that will be turned in with the final.