HW11 Book Exercises:

7.130

*7.130* The amplifier of Fig. P7.130 consists of two identical common-emitter amplifiers connected in cascade. Observe that the input resistance of the second stage, $R_{i2}$, constitutes the load resistance of the first stage.

(a) For $V_{CC} = 15$ V, $R_1 = 100$ kΩ, $R_2 = 47$ kΩ, $R_E = 3.9$ kΩ, $R_C = 6.8$ kΩ, and $\beta = 100$, determine the dc collector current and dc collector voltage of each transistor.

(b) Draw the small-signal equivalent circuit of the entire amplifier and give the values of all its components.

(c) Find $R_{i1}$ and $v_{be}/v_{ab}$ for $R_{i2} = 5$ kΩ.

(d) Find $R_{o2}$ and $v_{o2}/v_{b2}$.

(e) For $R_L = 2$ kΩ, find $v_o/v_{ab}$.

(f) Find the overall voltage gain $v_o/v_{ab}$.