

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,  $R_{in2}$ , constitutes the load resistance of the first stage.

- (a) For  $V_{CC} = 15\text{ V}$ ,  $R_1 = 100\text{ k}\Omega$ ,  $R_2 = 47\text{ k}\Omega$ ,  $R_E = 3.9\text{ k}\Omega$ ,  $R_C = 6.8\text{ k}\Omega$ , 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  $R_{in1}$  and  $v_{b1}/v_{sig}$  for  $R_{sig} = 5\text{ k}\Omega$ .
- (d) Find  $R_{in2}$  and  $v_{b2}/v_{b1}$ .
- (e) For  $R_L = 2\text{ k}\Omega$ , find  $v_o/v_{b2}$ .
- (f) Find the overall voltage gain  $v_o/v_{sig}$ .

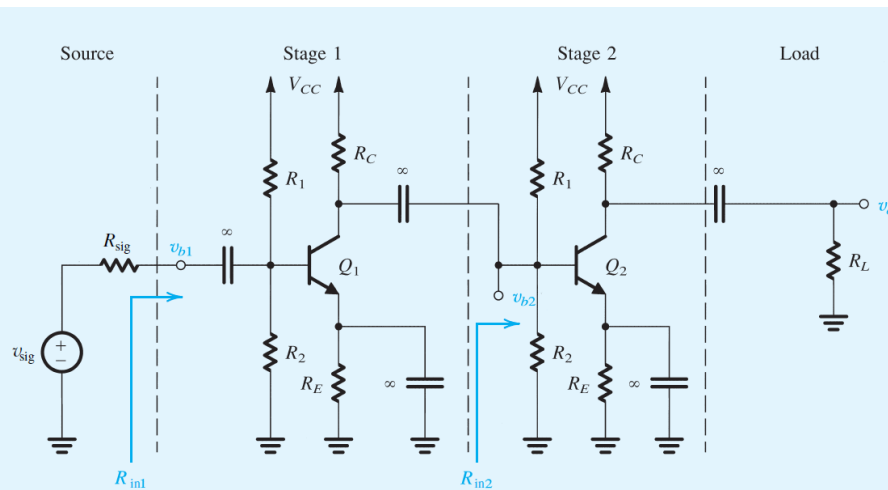


Figure P7.130