

Homework 5 Due Date Thursday, Feb 28th, in class

Problem 5.9

(a) The pnp transistor shown in Figure P5.8 has a common-base current gain $\alpha = 0.9860$. Determine the emitter current such that $V_C = -1.2$ V. What is the base current? (b)

Using the results of part (a) and assuming $I_{EO} = 2 \times 10^{-15}$ A, determine V_{EB} .

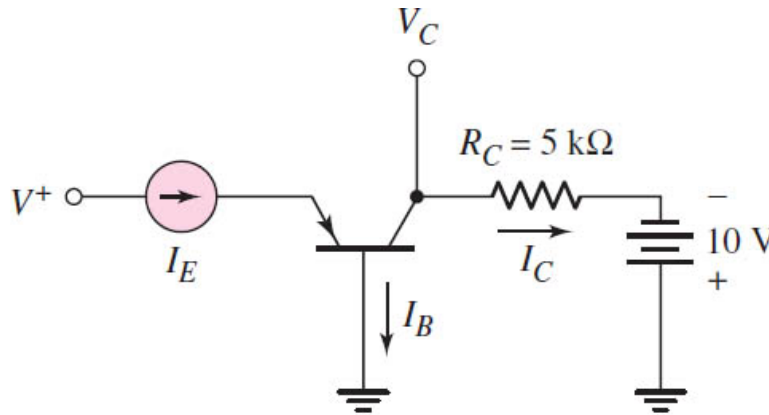


Figure P5.8

Problem 5.17

For all the transistors in Figure P5.17, $\beta = 75$. The results of some measurements are indicated on the figures. Find the values of the other labeled currents, voltages, and/or resistor values.

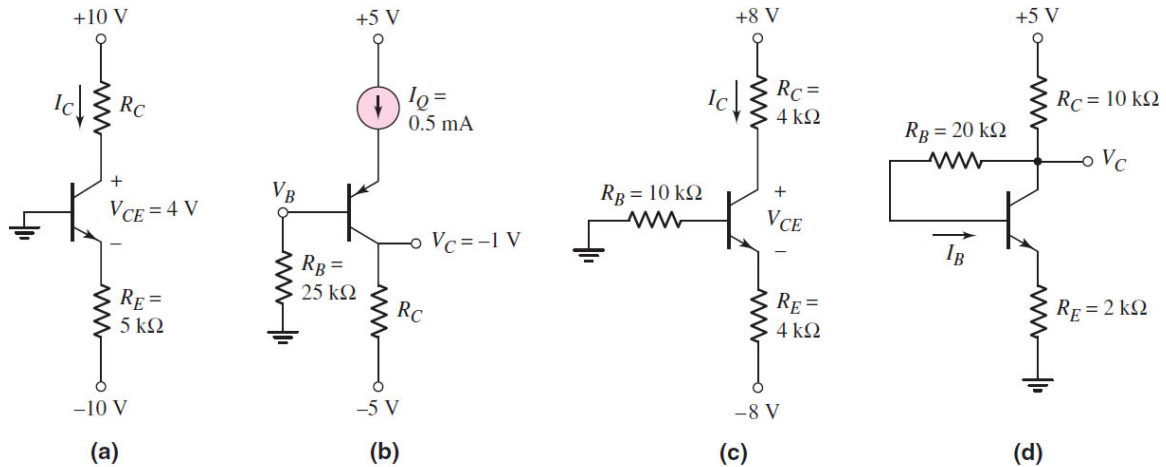


Figure P5.17

Problem 5.19

Consider the two circuits in Figure P5.19. The parameters of each transistor are $I_S = 5 \times 10^{-16}$ A and $\beta = 90$. Determine V_{BB} in each circuit such that $V_{CE} = 1.10$ V.

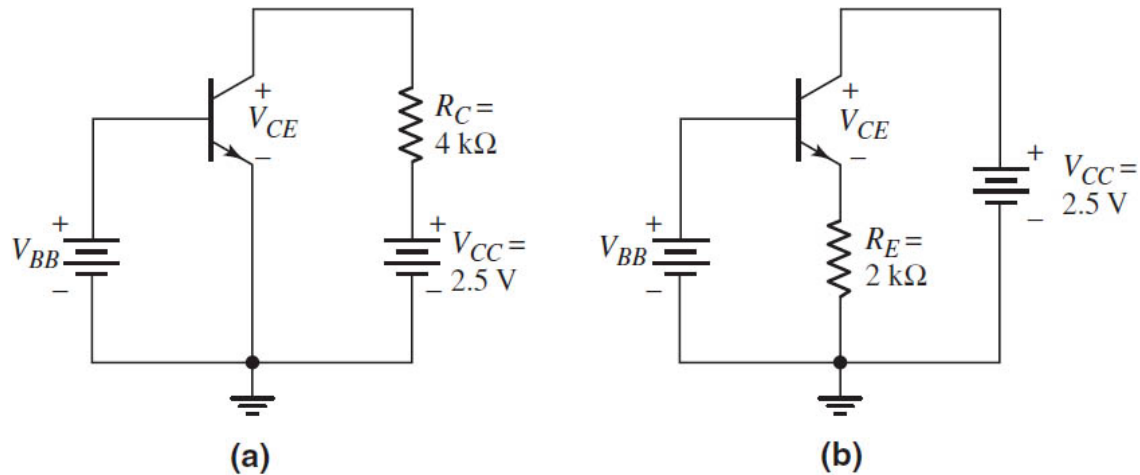


Figure P5.19

Problem 5.21

Consider the circuits in Figure P5.21. For each transistor, $\beta = 120$. Determine I_C and V_{EC} for each circuit.

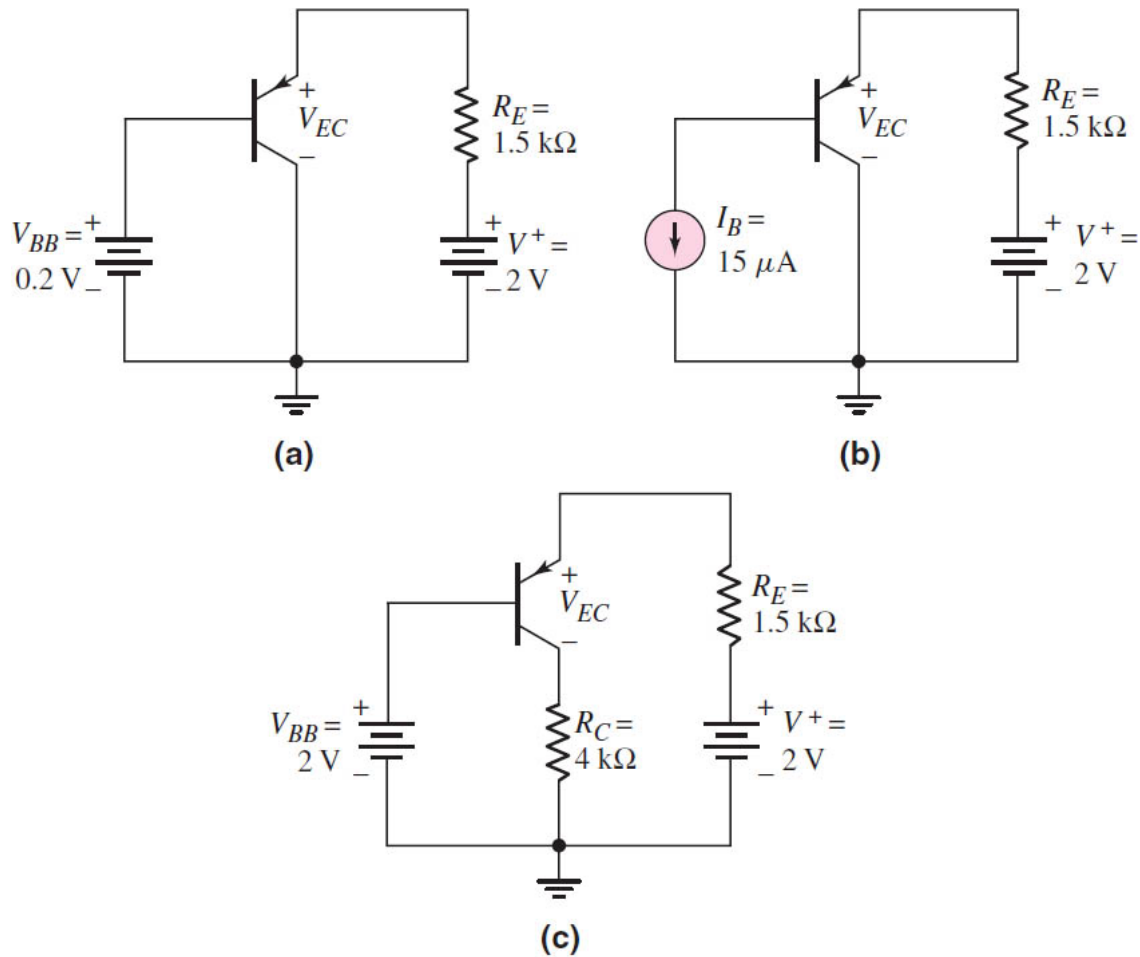


Figure P5.21

Problem 5.23

In the circuits shown in Figure P5.23, the values of measured parameters are shown. Determine β , α , and the other labeled currents and voltages. Sketch the dc load line and plot the Q -point.

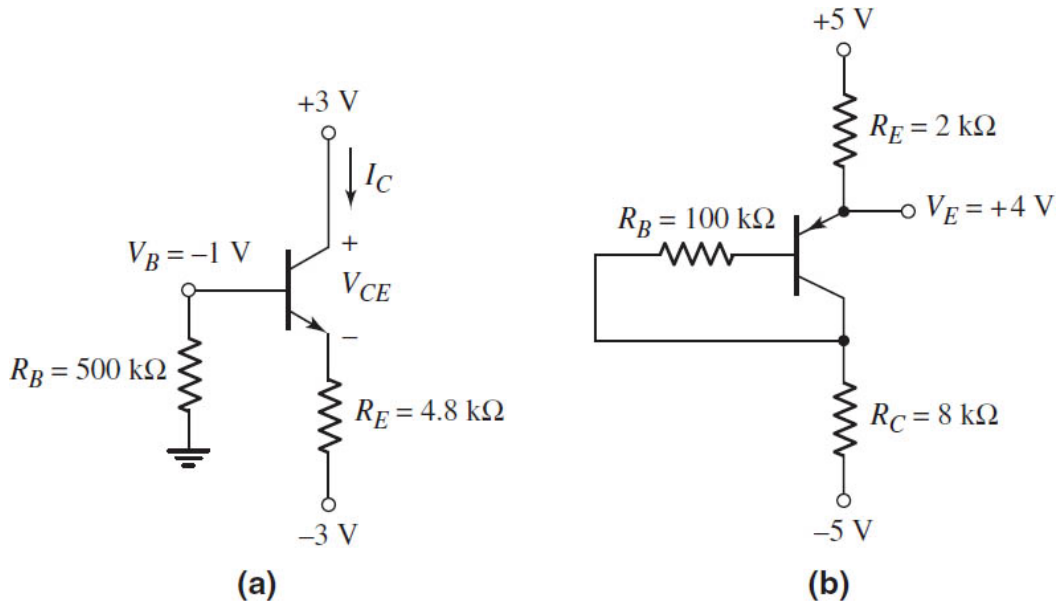


Figure P5.23