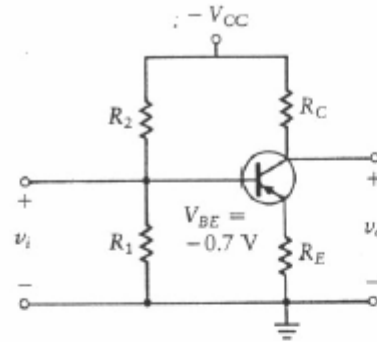


- 1) Find the values of  $R_1$  and  $R_2$  necessary to place the Q-point of the circuit of Figure P2.2(a) in the center of the dc load line. Assume that  $V_{CC} = -25$  V,  $R_C = 2$  k $\Omega$ , and  $R_E = 1$  k $\Omega$ , and  $\beta$  has the following value.
- $\beta = 150$
  - $\beta = 100$
  - $\beta = 50$



(a)

Figure P2.2

- 2) Use the amplifier of Figure P2.3.
- Find the values of  $R_1$  and  $R_2$  for  $I_{CQ} = 30$  mA.
  - Find the output symmetrical swing using the values of part (a).
  - Draw the ac and dc load lines.
  - Sketch the waveforms for  $i_C$  and  $v_{CE}$ .

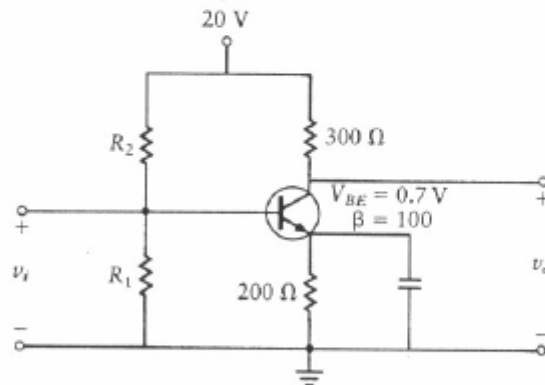


Figure P2.3

- 3) Use the amplifier of Figure P2.3.
- Find the values of  $R_1$  and  $R_2$  to achieve maximum symmetrical swing.
  - Determine the value of maximum symmetrical swing achieved in part (a).
  - Draw the ac and dc load lines.
  - Sketch waveforms for  $i_C$  and  $v_{CE}$ .

- 4) Use the emitter follower amplifier shown in Figure P2.10.
- Determine the values of  $V_{CEQ}$  and  $I_{CQ}$ .
  - Draw the dc and ac load lines.
  - Determine the value of symmetrical output voltage swing.
  - The  $1\text{-k}\Omega$  resistor is now bypassed with a capacitor. Describe the changes that occur in the operation of the circuit.

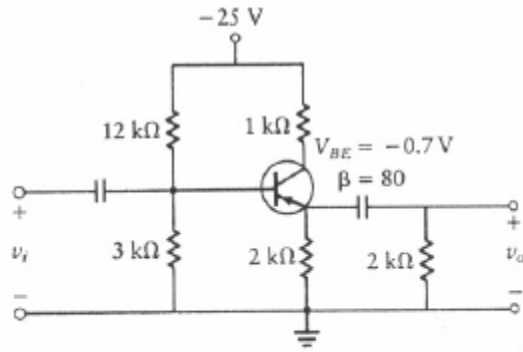


Figure P2.10