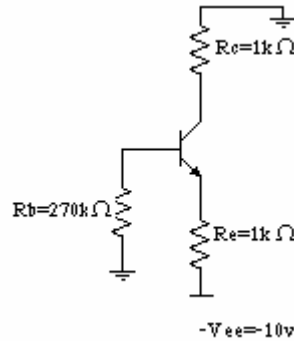
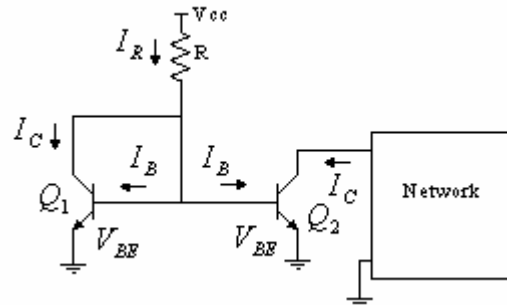


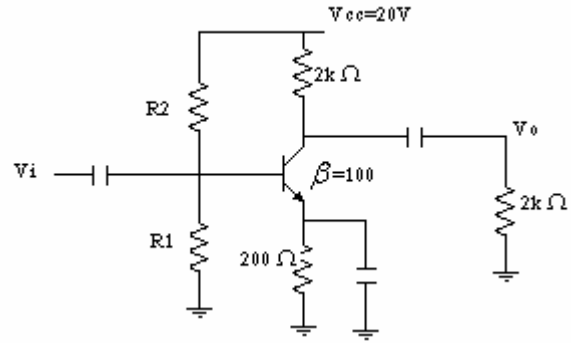
- 1) For the circuit in figure determine the region of operation and the values of I_B, I_C and V_{CE} . The BJT has $\beta = 100$.



- 2) The circuit shown is a *current source* or *current mirror* and is extensively used to bias BJTs in analog ICs. The transistor Q1 and Q2 are identical; that is, they are fabricated to have matched characteristics. (a) Determine I_C in terms of the circuit parameters. (b) Evaluate I_C for $V_{CC} = 10V, R = 10k\Omega$ and $\beta = 100$. (c) Repeat part b for $\beta = 200$.



- 3) What do you know about the *punch through* effect in BJT? Discuss perfectly.
- 4) In the CE amplifier of the figure:
- Find the values of R_1, R_2 for $I_{CQ} = 8mA$.
 - Determine the symmetrical output voltage swing for the values of part (a).
 - Draw the ac and dc load lines.
 - Determine the power dissipated by the transistor and the power absorbed by R_L .



- 5) In the CE amplifier of the figure of problem 4:
- Find the values of R_1 , R_2 needed to achieve maximum symmetrical swing.
 - Determine the symmetrical output voltage swing for the values of part (a).
 - Draw the ac and dc load lines.
 - Determine the power dissipated by the transistor and the power absorbed by R_L .