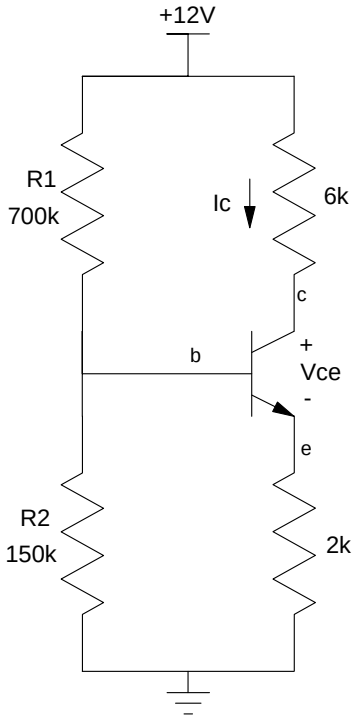
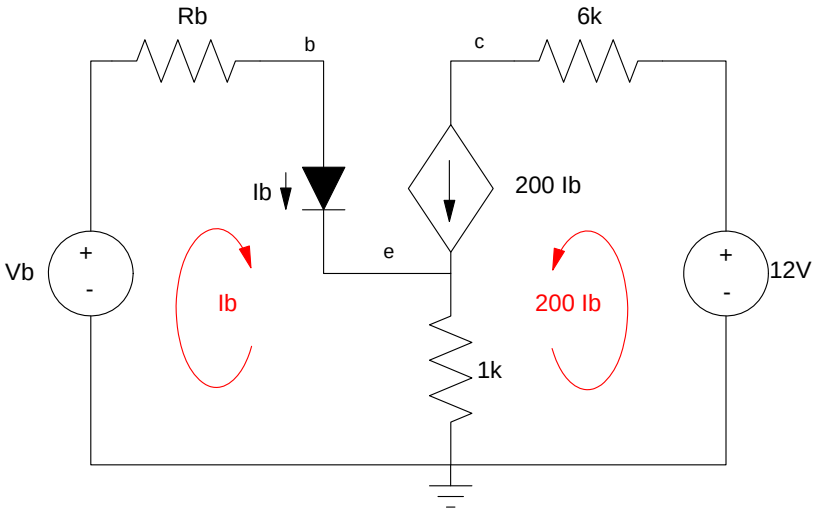
ECE 321 - Quiz #4 - Name _____

Transistor Amplifiers. Fall 2019

1) Determine the Thevenin equivalent of R1, R2, +12V and the Q-point. Assume
   - Vbe = 0.7V
   - $\beta = 200$

Vth (Vb)	Rth (Rb)	Vce	Ic



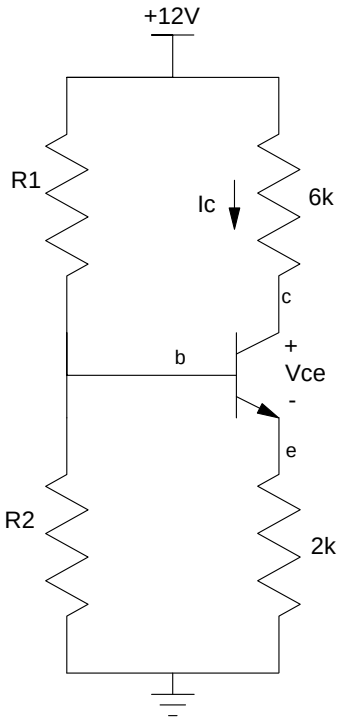


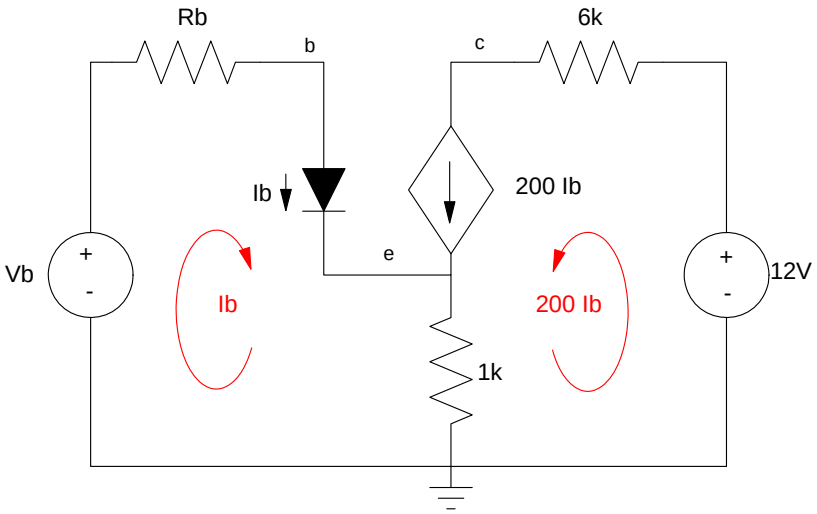
2) Determine R1 and R2 so that

- The Q-point is stabilized for variations in β (i.e. $(1+\beta)R_e >> R_b$)
- The Q-point is Vce = 4.0V

Assume Vbe = 0.7V and β=200

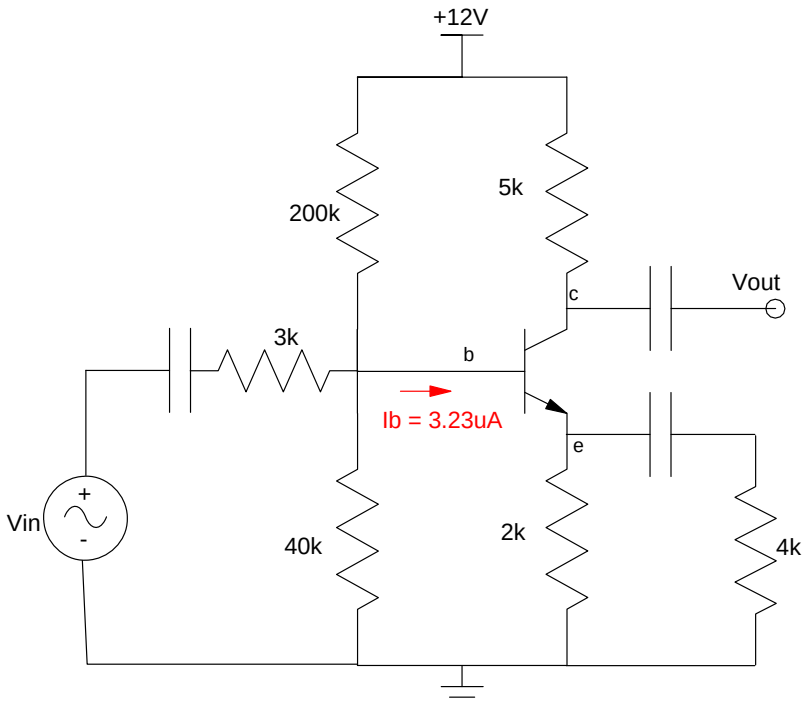
Vth (Vb)	Rth (Rb)	Vce	Ic





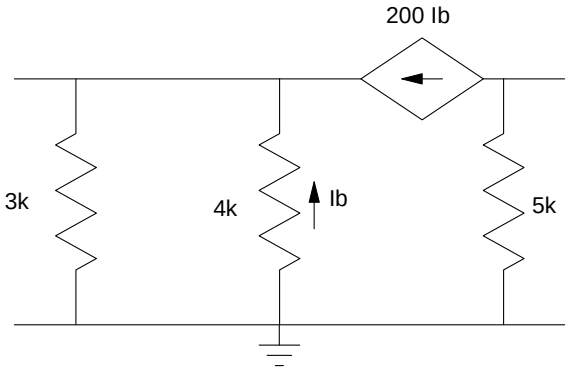
3) Small Signal Model. Draw the small signal model for the following amplifier. Assume

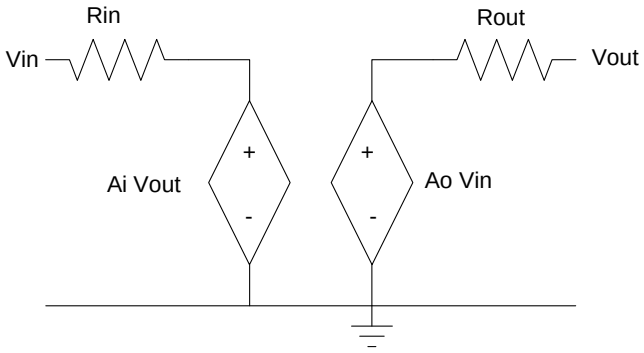
- $\beta = 200$
- $r_f = 16k\Omega$ (Ib = 3.23 uA)



4) Determine the 2-port model for the following circuit

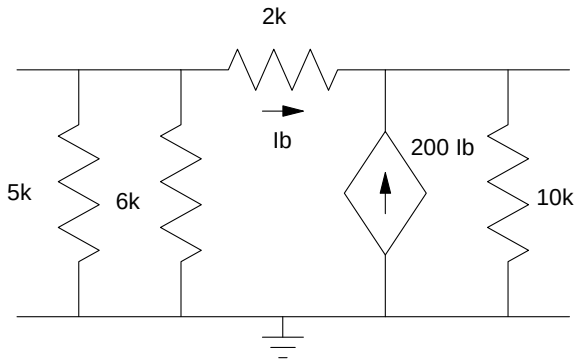
Rin	Ai	Rout	Ao

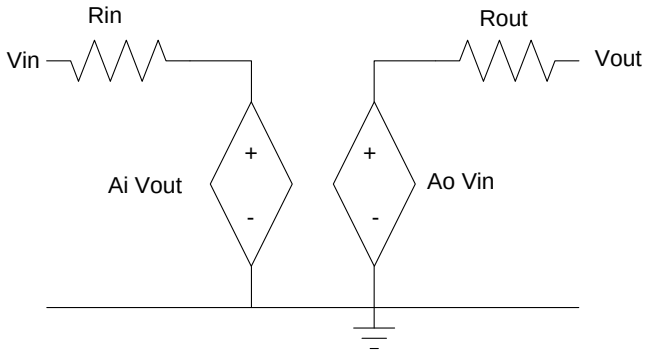




5) Determine the 2-port model for the following circuit

Rin	Ai	Rout	Ao





Bonus!!! What was the purpose of the Reconstitute-Inator?

- Turn dinosaur bones back into dinosaurs because Dr. Doofenschmirtz always wanted a pet T-rex
- Restore the dried out coursage that Dr. Doofenschmirtz's girlfriend gave him back in high-school
- Turn raisins back into grapes.
- Turn orange-juice back into orange trees to fill Dr. Doofenschmirtz's new green house