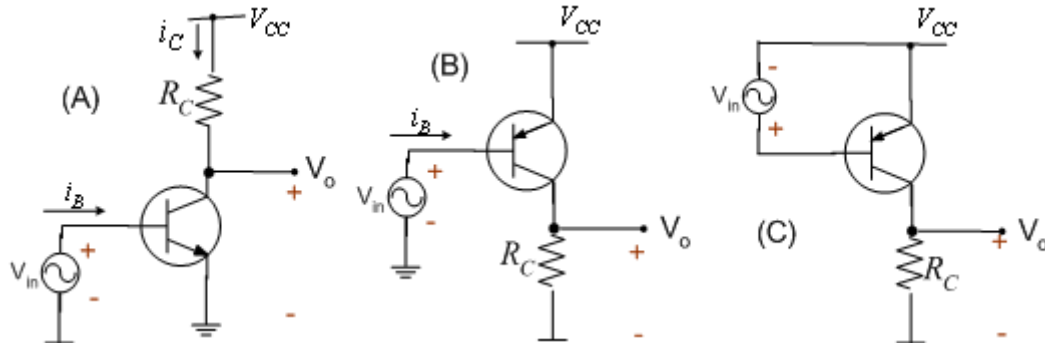
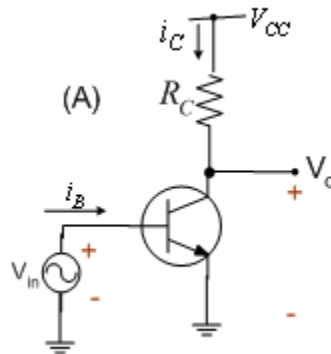


EE311 HW # 8
Spring 2007

1. Draw the small-signal equivalent circuits for the following three BJT circuits:



2. Design a common emitter amplifier with $V_{CC} = 1.8 \text{ V}$ and a power budget $P = 1 \text{ mW}$ while achieving maximum voltage gain for the following BJT operating conditions:
- edge of saturation ($V_{BC} = 0 \text{ V}$)
 - soft saturation ($V_{CE} = 0.4 \text{ V}$)
 - strong saturation ($V_{CE} = 0.2 \text{ V}$)
- (Hint: determine R_C and voltage gain in each case)



3. Assuming the following circuit is biased with $I_C = 1 \text{ mA}$ and $R_C = 1 \text{ k}\Omega$. Given $\beta = 100$ and $V_{CC} = 10 \text{ V}$, determine the small signal voltage gain and the input and output impedances.

