ECE 320 - Homework #6
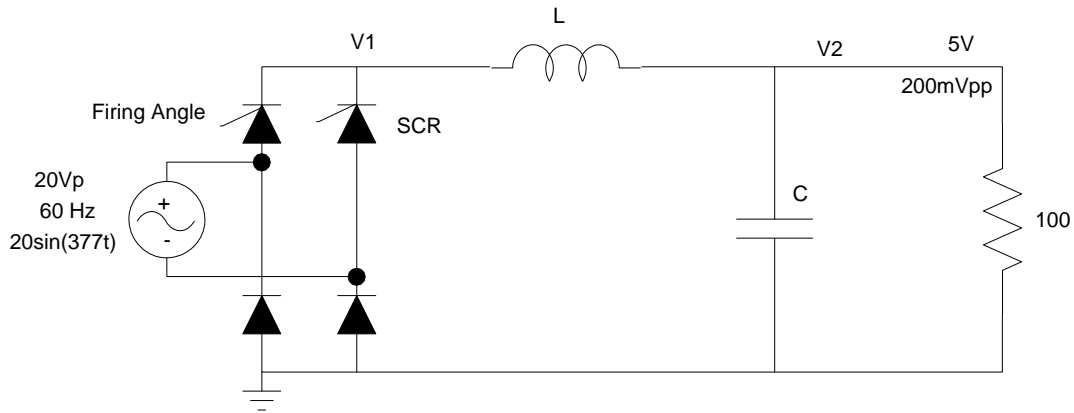
DC to AC Converter, SCR. Due Monday, October 3rd

SCR

1) Determine the firing angle so that the mean of V1 is 5V

2) Find L so that the ripple at V2 is 2Vpp assuming C = 0.

3) Find C so that the ripple at V2 is reduced to 200mVpp

4) Sinulate this circuit with a firing angle of zero degrees (making the SCR just a diode).
   - What is the DC voltage at V2? Why isn't it 5V any more?
   - What is the AC voltage at V2 (V2pp)?

AC to DC

5) Find the Fourier transform for the signal at V1 with the firing angle you computed in problem 1.

6) If you ignore the DC term, what percentage of the energy is in the 1st harmonic?