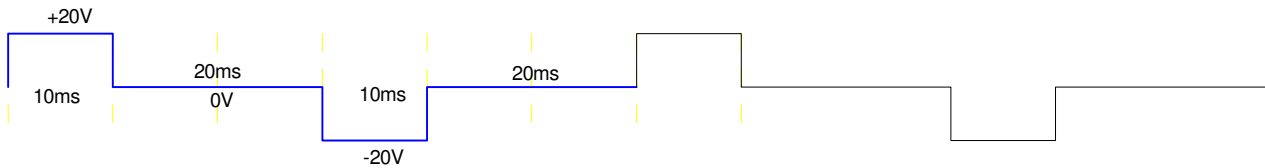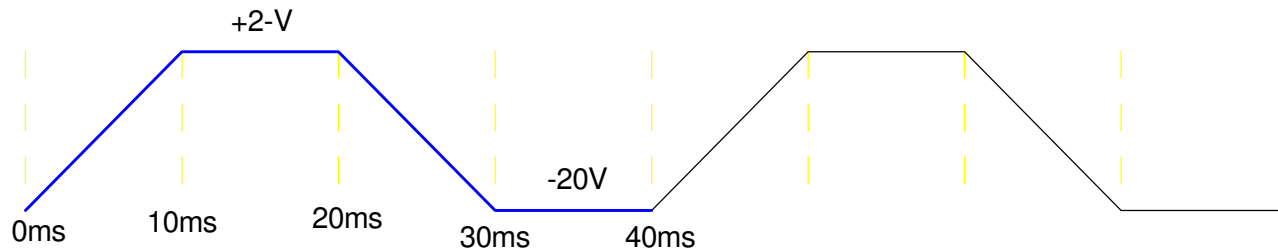# ECE 320 - Homework #7

DC to AC, SCR, Boolean Logic. Due Monday, March 2nd

DC to AC

1) Determine the efficiency of the following DC to AC converter (i.e. how much of the energy is in the 1st harmonic?). (on for 10ms (+20V), off for 20ms, on for 10ms (-20V), off for 20ms, repeat)
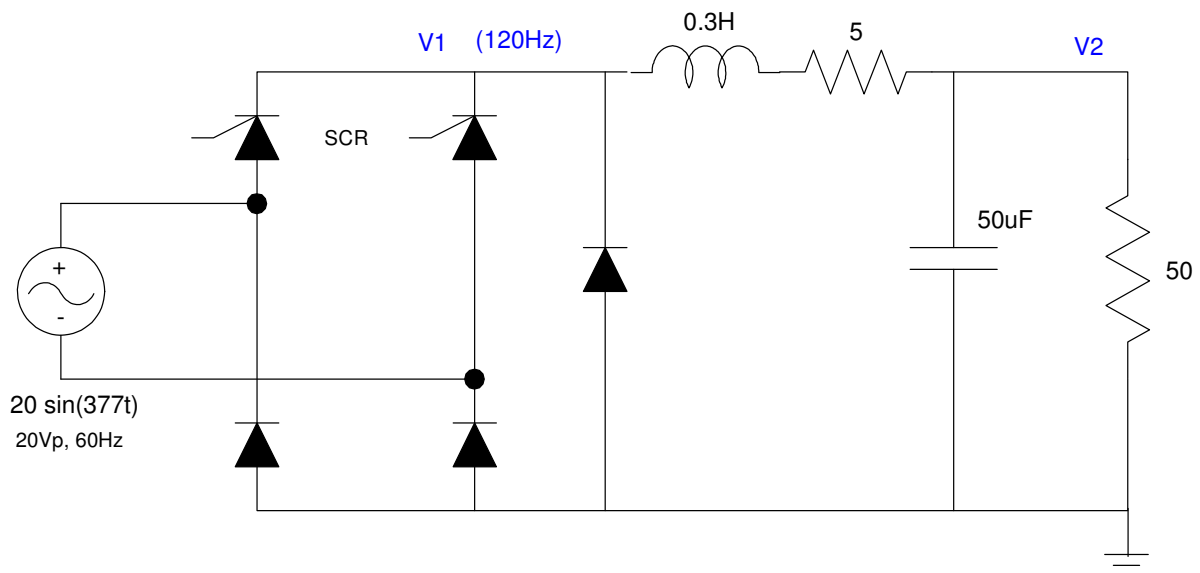

1) Determine the efficiency of the following DC to AC converter (i.e. how much of the energy is in the 1st harmonic?).

SCR

3) Assume a firing angle of 75 degrees. Determine the voltage at V1 and V2 (both DC and AC).

4) Change this circuit so that
   - The voltge at V2 is 7.50V (DC)
   - With a ripple of 0.4Vpp

Boolean Logic:

5) Implement the following funciton using NAND gates (i.e. circle the ones)

d(A,B,C,D)		CD			
		00	01	11	10
AB	00	1	0	1	1
	01	0	1	0	1
	11	x	x	x	x
	10	1	0	x	x

6) Implement the following function using NOR gates (i.e. circle the zeros)

d(A,B,C,D)		CD			
		00	01	11	10
AB	00	1	0	1	1
	01	0	1	0	1
	11	x	x	x	x
	10	1	0	x	x