ECE 320 - Homework #6

DC to DC Converters, DC to AC Converters. Due Monday, October 1st, 2018

DC to DC Converters (Buck Converters)

1) Determine the DC and AC votlages at V1 and V2 for the following Buck converter.

2) Modify this Buck converter so that for a 330 Ohm load

- V2(DC) = 5V
- V2(AC) = 100mVpp



Problem 1 & 2: Buck Converter for Analysis

3) Check your Buck converter in PartSim. Note: You'll probably need to use a transistor for this circuit

4) Lab: Build this Buck converter in lab Check your Buck converter in PartSim. Note: You'll probably need to use a TIP112 transistor for this circuit



Problem 3 & 4: Buck Converter for Simulation and Test

DC to AC Converters (Fourier Transform)

5) Determine the first 5 terms for the Fourier Series for the following waveform (V1 for problem #1).
Plot V1(t) and it's Fourier Series approximation out to the 5th harmonic (20kHz)
6) Determine the Fourier Series approximation for V2(t) for the circuit of problem #1



Problem 5 & 6: 60% duty cycle square wave from problem #1