

Electronics and Instrumentation

Name _____ ENGR-4300 Fall 2001 Section _____

Extra Credit #6

1. Write out the expression for the complex impedance of a series RLC circuit. Simplify this expression for the condition where the circuit is in resonance. Why is the frequency at which this occurs called the resonant frequency?
2. Give an example of a high-pass filter that passes frequencies above 10kHz without significant alteration and essentially blocks all frequencies below 1kHz. There are many possible answers to this question. Thus, you will need to provide a PSpice simulation to support your answer.
3. Find an example of a circuit (on the web or in a book of some kind) in which you can identify that a full-wave rectifier is used to produce a DC voltage from an AC line voltage. Attach a copy of this circuit to this paper. Do a PSpice simulation of the rectifier and explain how it works.
4. What is power supply ripple? What methods can be used to reduce ripple?
5. Why is necessary to know the knee current of a Zener diode if you are to apply it correctly?