

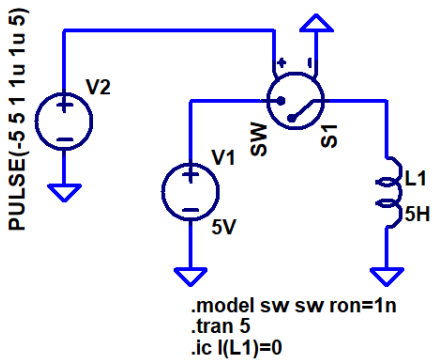
Final Exam – EE 442 and ECG 642 Power Electronics
Fall 2022 – University of Nevada, Las Vegas

NAME: _____

Closed book and notes.

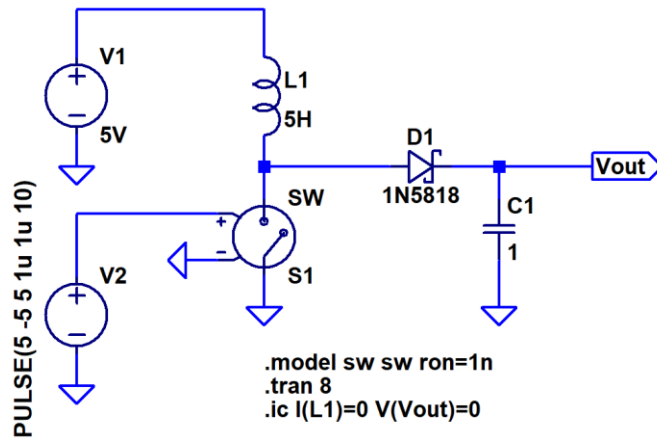
Show your work for credit and put a box around your answers.

1. Determine, and sketch, the current flowing in the inductor in the following circuit. (5 points)



2. Explain, in your own words, what the difference between reverse recovery time and storage time is in a diode. (5 points)

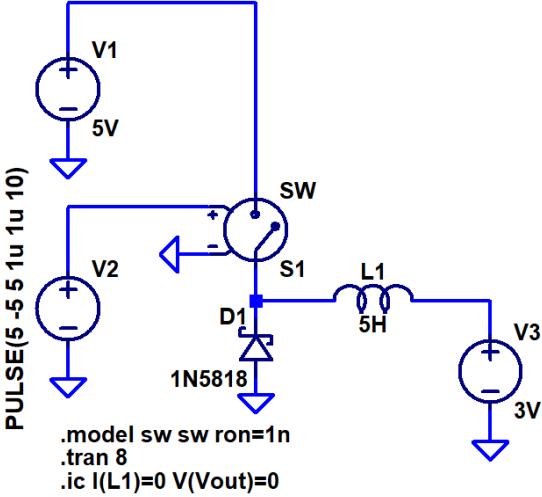
3. Estimate, and plot, the output voltage in the following circuit. (15 points)



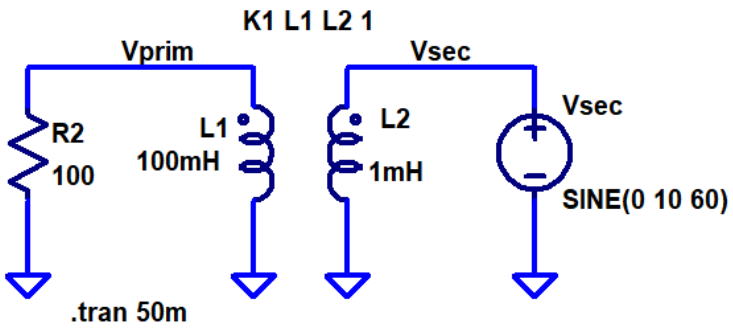
4. Explain how an opto-isolator works? (5 points)

5. What is the average power used to charge/discharge a 1 μ F capacitor between 5V and ground at 100MHz? What is using, and what is storing, the energy in this situation? (5 points)

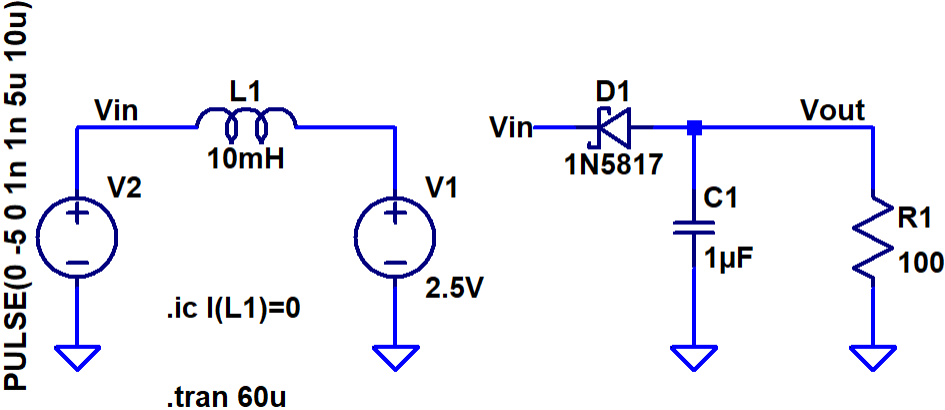
6. Estimate, and sketch, the current flowing in the inductor in the following circuit. (15 points)



7. Determine, and sketch, the currents (sinusoidal time domain equations that show phase shift) flowing in the following circuit. (15 points)



8. Determine the currents flowing in L1 and R1 in the following circuits. (10 points)



9. For the following circuit, determine the current in the inductor, the average output voltage, and the ripple in the output voltage. As always, show your hand calculations for credit. Assume steady-state operation. (25 points)

