

Faraday Induction

Print Name _____

Pre-lab Test 9 (10 Points)

Lab Section _____ Date _____

Staple your work sheet to this pre-lab test. You are required to show your calculations! Points will be taken off if your work is not neat and well organized. Be sure to print your name on both sheets.

- 1) A solenoid 10 cm long with a diameter of 1 cm has 2920 turns of wire coiled on it. Calculate its inductance in Henrys

$$L = \underline{\hspace{2cm}}$$

- 2) A current flows through the inductor. Its magnitude is 47 milliamps. And it oscillates as a sine wave with a frequency of 100 Hz. What is the average induced emf in the solenoid?

$$\text{emf} = \underline{\hspace{2cm}}$$

- 3) A second solenoid 10 cm long with a diameter of 0.5 cm, having 197 turns, is inserted into the first solenoid. What is the voltage that you expect to measure across the second solenoid if the signal applied to the first solenoid is the same as in question 2?

$$V_2 = \underline{\hspace{2cm}}$$