

EE 220/220L Circuits I (Spring 2009)

Laboratory Practical Exam

Name _____

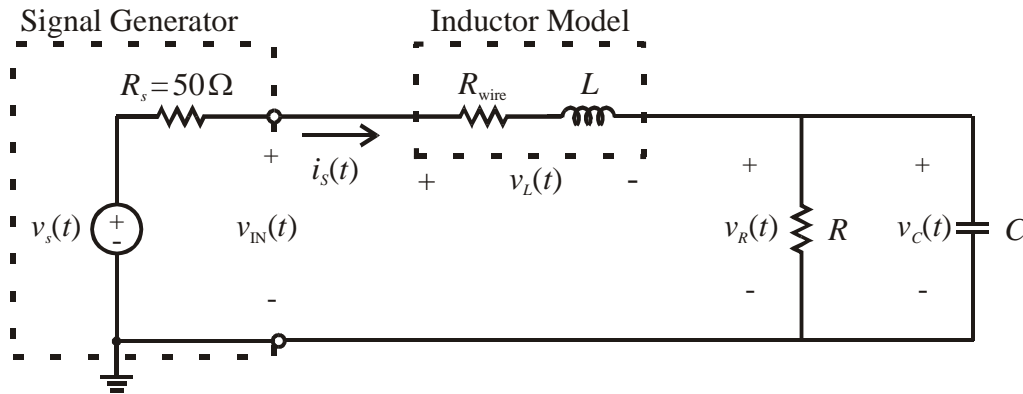


Figure 1

Using **ONLY** the components and equipment on your desk, you have **30 minutes** (there is a penalty for overtime) to setup the signal generator and circuit shown in Fig. 1 for the values given. The signal generator is modeled as an ideal voltage source $v_s(t) = V_{DC} + V_m \cos(\omega t)$ V in series with an internal source resistance $R_S = 50 \Omega$. Given:

- $V_{DC} = -2$ V & $V_m = 8$ V
- $f = 440$ Hz
- provided inductor
- resistance of $R = 220 \Omega$
- capacitance of $C = 1 \mu\text{F}$.

Using a digital multimeter, complete the following tasks:

- | | |
|---|---------------------|
| 1) Measure the RMS source current. | $I_{S,RMS} =$ _____ |
| 2) Measure the DC source current. | $I_{S,DC} =$ _____ |
| 3) Measure the RMS voltage across the resistor. | $V_{R,RMS} =$ _____ |
| 4) Measure the DC voltage across the inductor. | $V_{L,DC} =$ _____ |

Using an oscilloscope, complete the following tasks::

- 5) Display $v_{IN}(t)$ on ch. 1 and $v_C(t)$ on ch. 2 using the same voltage scale for both signals. Adjust the reference levels (in even increments, keeping Ch. 1 & 2 aligned), volts/div, and seconds/div to display as close to two cycles of the signal as possible with the signals as large as possible.
- 6) **When finished, leave the circuit set-up & running and this sheet on the desk. Check-out with the lab instructor and leave (you are done). The instructor will check your circuit.**

Time = _____

Notes: