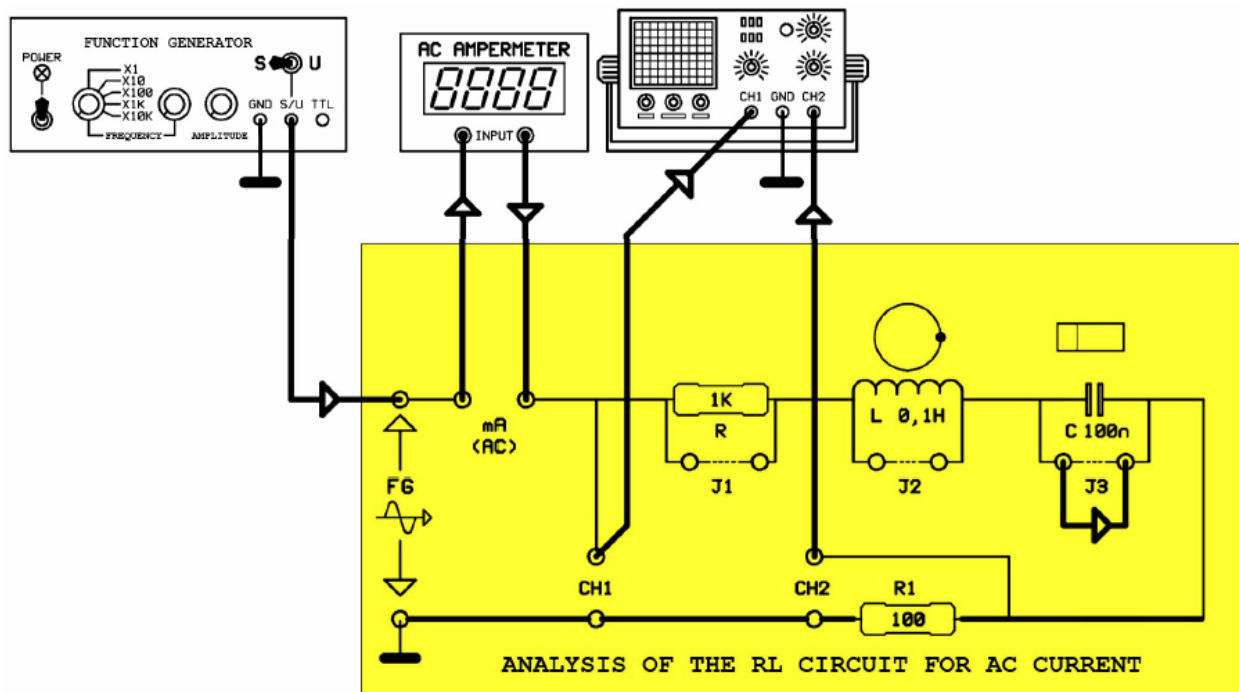# EXPERİMENT #5_1

EXAMINATION OF THE SERIAL RL CIRCUIT FOR AC CURRENT

REQUIRED MATERIALS:

1. Function generator
2. Oscilloscope (two channels)
3. AC Voltmeter
4. Y-0016/01AC module
5. Connection cable

EXPERIMENT:

Adjust the terminal of the function generator to sine, peak to peak value to **Vpp=10 Volt** and frequency to **F=1 KHz**. Connect the **Y-0016/01AC** module to its place. Short-circuit the **J3**. Make the circuit connections as in the Figure. Apply the power to the circuit.

ANALYSIS OF THE RL CIRCUIT FOR AC CURRENT

EXPERIMENT OBSERVATIONS

1. What is the effect of short-circuiting the J3 points?

2. What can be said about the circuit looking at the waveform on the oscilloscope?

3. Calculate the inductive reactance of the inductor.

4. Short circuit the CH2 points so that the "R1" resistor will not affect the circuit. Calculate the total resistance of the circuit.

5. Calculate the circuit impedance

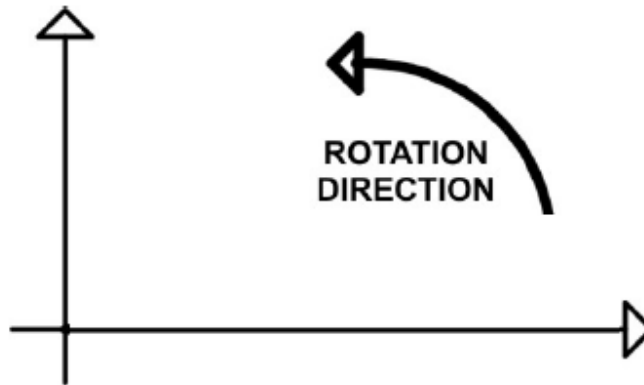**6.** Calculate the circuit current.

7. Compare the current value in Ampermeter with the calculated current value.

8. Calculate the voltages on resistor and inductor using the current value.

9. Read the voltage values of resistor and inductor with the AC Voltmeter. Compare these values with the ones we calculated.

10. Calculate the circuit voltage using the calculated voltage values (VR and VL). Compare the result with the voltage (V=3,5V) that you applied to the circuit.

11. Draw the phasor diagram of the circuit.

ROTATION
DIRECTION

12. Calculate the power factor of the circuit, active power dissipated by the circuit and the phase angle.