ELECTROTECHNICH LAB.

PART 6 EXPERIMENTS

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Contents

EXPERIMENT 19.1

EXAMINATION OF PARALLEL RESONANCE

REQUIRED MATERIAL:

1- Function generator
2- Oscilloscope (**two channeled**)
3- AC ampermeter
4- Y-0016/02AC module
5- Enough connection cable

THE EXPERIMENT:

Adjust the frequency commutator of function generator to "**X1K**". At that position, if the frequency adjustment potentiometer of function generator is switched from minimum to maximum, it will generate signal between 1KHz and 10KHz. At any frequency of that position, adjust the peak to peak amplitude of output signal to Epp=10Volt. Connect the Y-0016/02AC module to its place. Make the circuit connections as in the figure 17.7

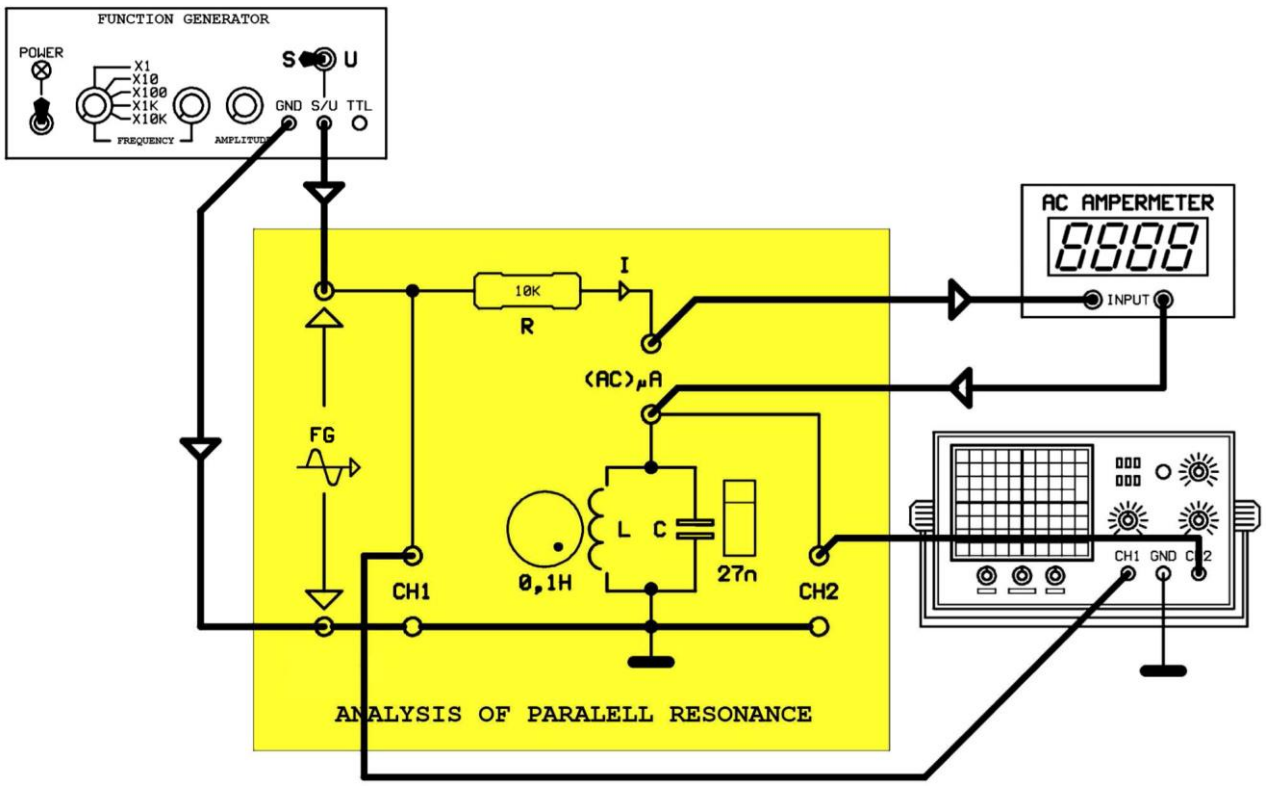

Figure 17.7

Make sure that that the Ampermeter props are short especially at CH2 channel of oscilloscope in order to have noiseless signal. Or short circuit the terminals of Ampermeter on every step. So the signal will be clear. Make the Ampermeter measurements of every step just after removing the short circuit.

1- Calculate the resonance frequency of the circuit.

$$fo = \frac{1}{2\pi\sqrt{LC}} =$$

$$fo =$$

2- Adjust the frequency of function generator to the highest amplitude at CH2 channel of oscilloscope. What is the name of frequency at that moment? Measure that frequency value.

3- Compare the resonance frequency you calculated and the value you measured.

4- Adjust the frequency between 1KHz-5KHz, increase it gradually (0,5KHz at every step) while the output signal amplitude of the function generator is constant (Epp=10Volt). Write the circuit current of every step to a scale.

FREQUENCY (KHz)	1,0	1,5	2,0	2,5	3,0	3,35	3,5	4,0	4,5	5,0
CURRENT (μA)										

Figure 17.8

5- What can be said about the resistance, voltage and current variations of parallel resonance circuit looking at the table at figure 17.8

6- Measure the bandwidth of resonance circuit.

EXPERIMENT 19.2

EXAMINATION OF SERIAL RESONANCE

REQUIRED MATERIAL:

1- Function generator
2- Oscilloscope (**two channeled**)
3- AC ampermeter
4- Y-0016/02AC module
5- Enough connection cable

THE EXPERIMENT:

Adjust the frequency commutator of function generator to "**X1K**". At that position, if the frequency adjustment potentiometer of function generator is switched from minimum to maximum, it will generate signal between 1KHz and 10KHz. At any frequency of that position, adjust the peak to peak amplitude of output signal to Epp=10Volt. Connect the Y-0016/02AC module to its place. Make the circuit connections as in the figure 17.15

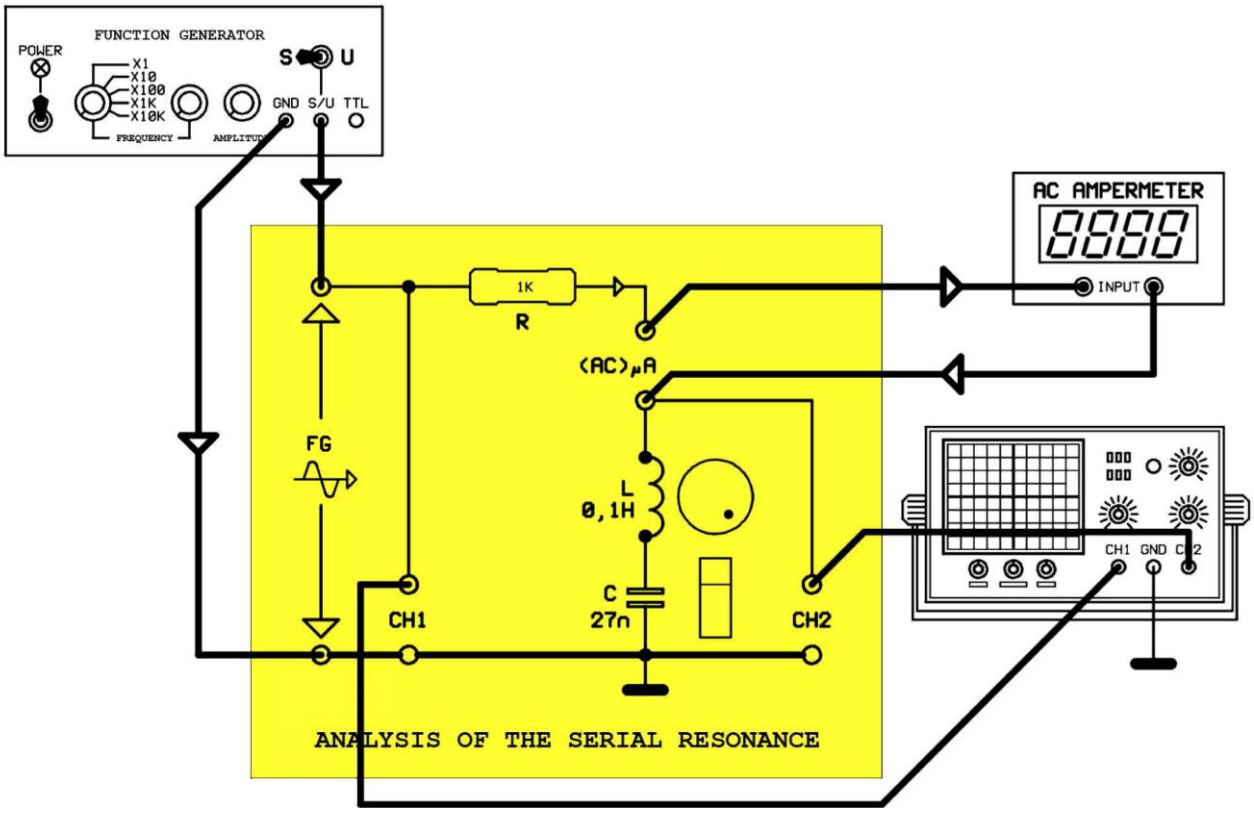

Figure 17.15

Make sure that that the Ampermeter props are short especially at CH2 channel of oscilloscope in order to have noiseless signal. Or short circuit the terminals of Ampermeter on every step. So the signal will be clear. Make the Ampermeter measurements of every step just after removing the short circuit.

1- Calculate the resonance frequency of the circuit

$$fo = \frac{1}{2\pi\sqrt{LC}} =$$

$$fo =$$

2- Adjust the frequency of function generator to the lowest amplitude at CH2 channel of oscilloscope. What is the name of frequency at that moment? Measure that frequency value

3- Compare the resonance frequency you calculated and the value you measured.

4- Adjust the frequency between 1KHz-5KHz, increase it gradually (0,5KHz at every step) while the output signal amplitude of the function generator is constant (Epp=10Volt). Write the circuit current of every step to a scale.

FREQUENCY (KHz)	1,0	1,5	2,0	2,5	3,0	3,35	3,5	4,0	4,5	5,0
CURRENT (mA)										

Figure 17.16

5- What can be said about the resistance, voltage and current variations of parallel resonance circuit looking at the table at figure 17.16

6- Measure the bandwidth of resonance circuit.