ELECTRONICS LABORATORY

PART 10 EXPERIMENTS

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Contents

EXPERIMENT 10.1

EXAMINATION OF RC PHASE SHIFT OSCILLATOR

EXPERIMENTAL PROCEDURE: Plug the Y-0016/014 module. Make the circuit connections as in figure 10.1.

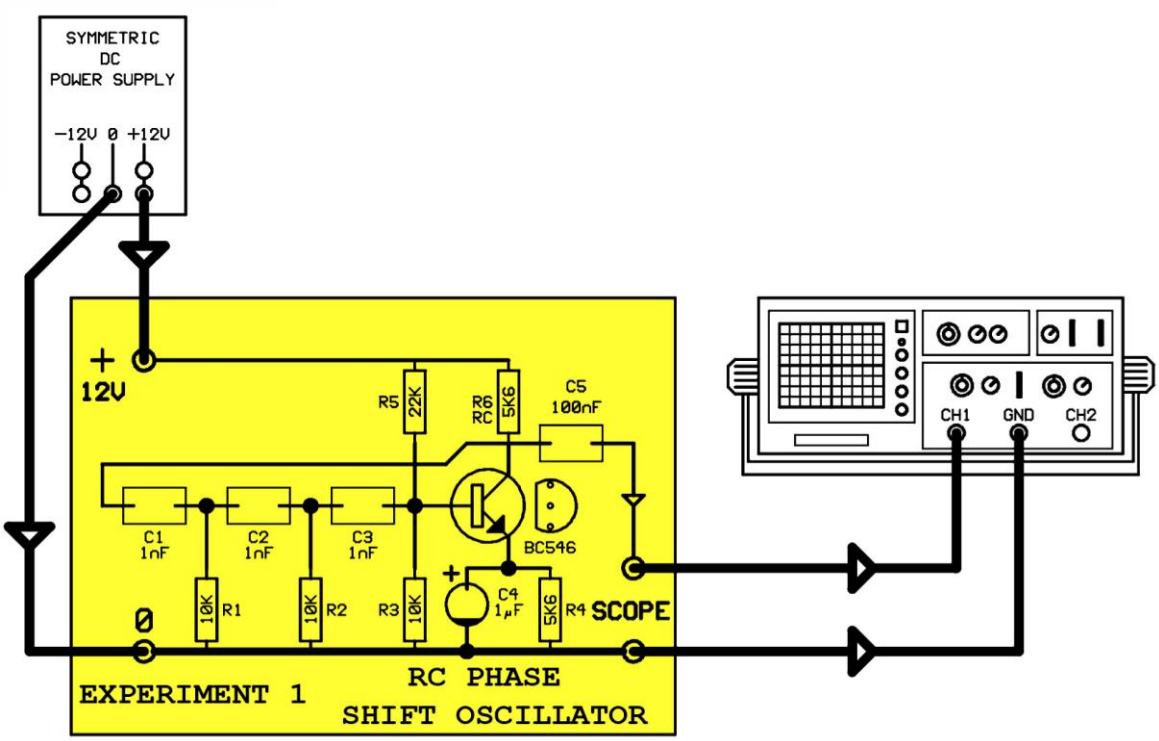

Figure 10.1

1- Apply energy to circuit. See the frequency at output of oscillator. What are the form, frequency and amplitude of signal?

Form of signal is ……, its frequency is …….KHz and amplitude is peak to peak ***Vopp=****……Volt*

2- According to component values, calculate the circuit frequency. Compare it with the value you see at oscilloscope.

$$Fo = \frac{1}{4{,}44.\pi.R.C}$$

$$Fo = ...KHz$$

EXPERIMENT: 10.2

EXAMINATION OF LC OSCILLATOR

EXPERIMENTAL PROCEDURE: Plug the Y-0016/014 module. Make the circuit connections as in figure 10.2.

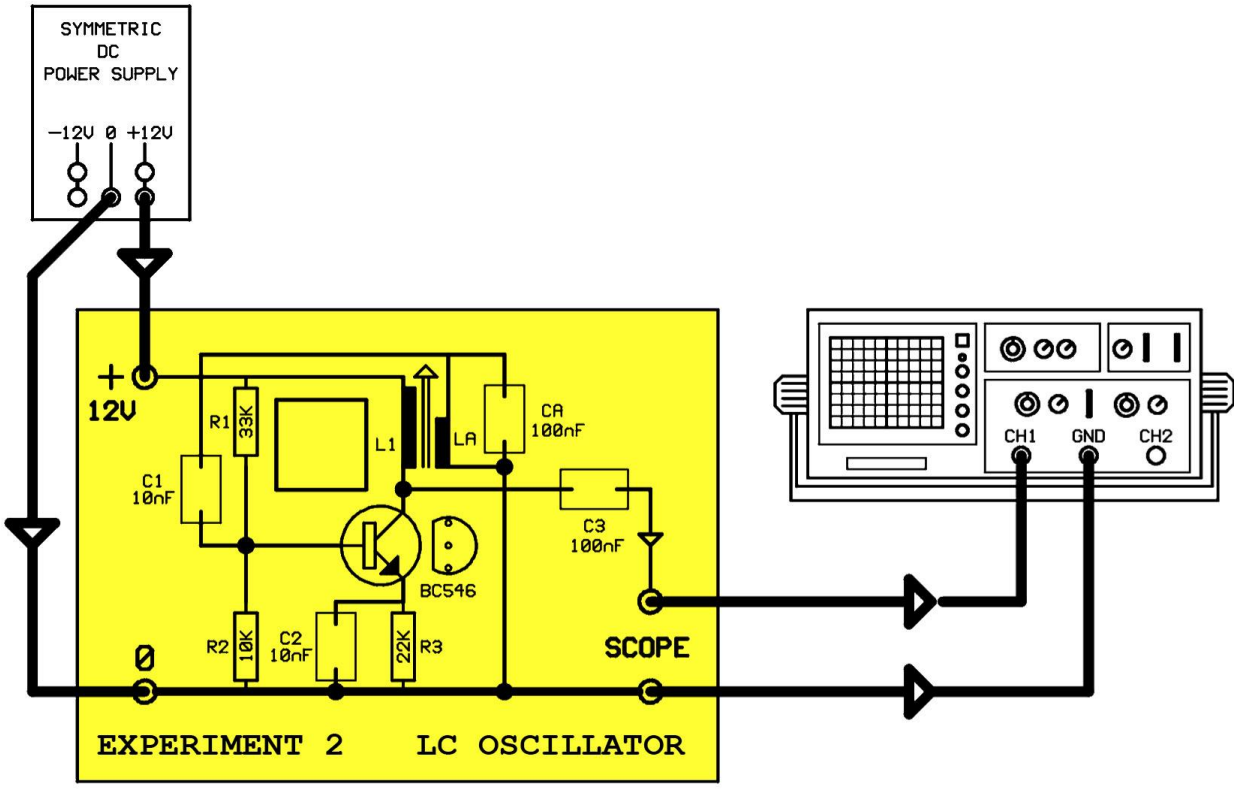

Figure 9.2

1- Apply energy to circuit. Define the output signal of oscilloscope.

Output signal is ……

2- Oscillator makes oscillation between frequency values of 250 KHz and 350 KHz. Calculate the minimum and maximum LA value according to the frequencies and plot the maximum and minumum frequency values of the oscillator.

EXPERIMENT 10.3

EXAMINATION OF PARALLEL HARTLEY OSCILLATOR

EXPERIMENTAL PROCEDURE: Plug the Y-0016/014 module. Make the circuit connections as in figure 10.3.

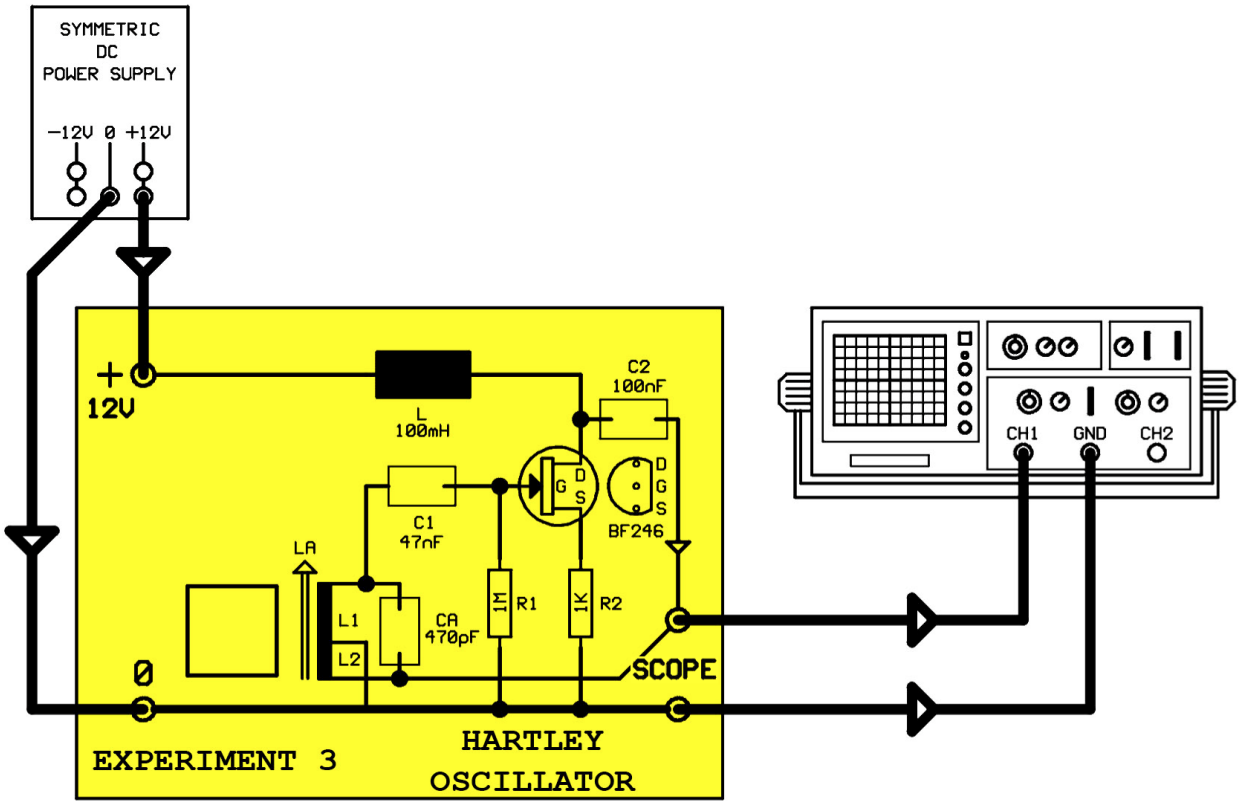

Figure 10.3

1- Apply energy to circuit. Define the output signal of oscilloscope.

Output signal is …….

2- *Oscillator makes oscillation between frequency values of 350 KHz and 450 KHz. Calculate the minimum and maximum LA value according to the frequencies and plot the maximum and minumum frequency values of the oscillator.*

EXPERIMENT 10.4

EXAMINATION OF COLPITTS OSCILLATOR

EXPERIMENTAL PROCEDURE: Plug the Y-0016/014 module. Make the circuit connections as in figure 10.4.

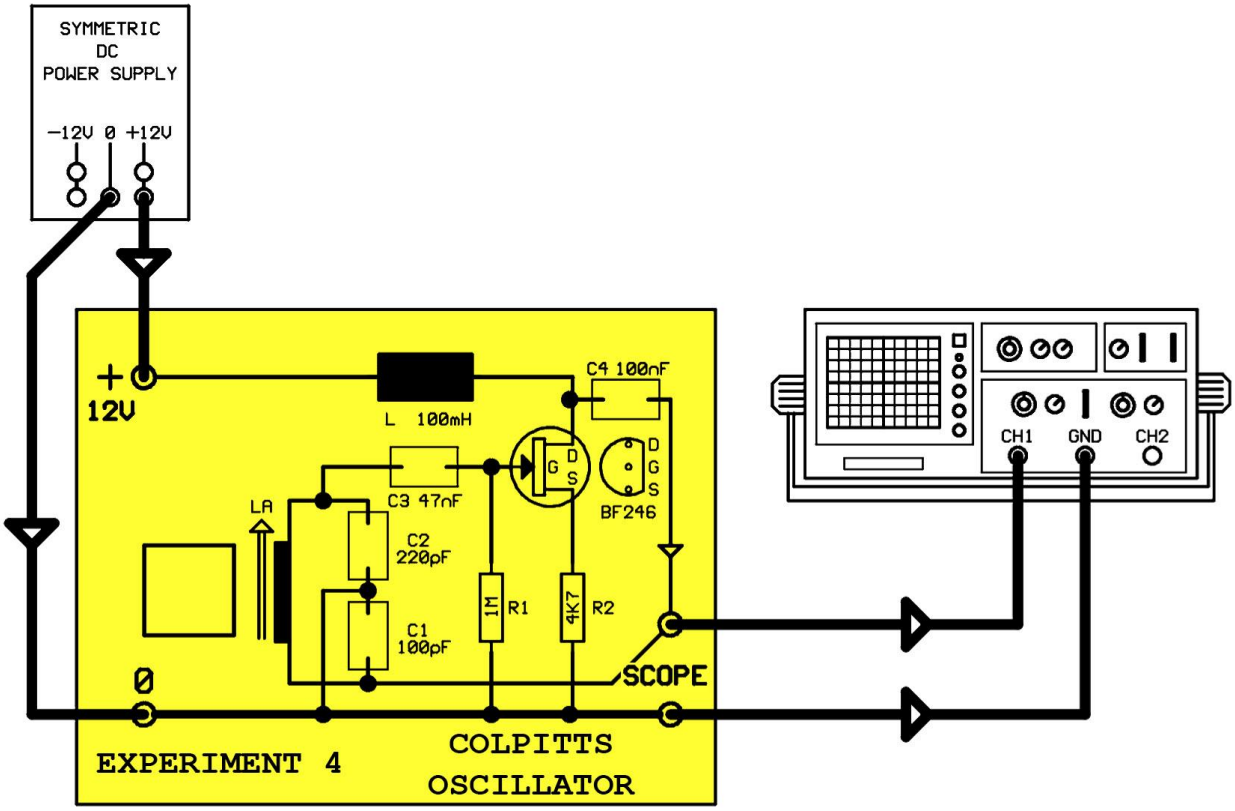

Figure 9.4

1- Apply energy to circuit. Define the output signal of oscilloscope.

NOTE: If the LA coil is out of operating limits there will not be oscillation. In that situation, adjust the LA.

Output signal is …….. Oscillator makes oscillation between frequency values of 650 KHz and 950 KHz.

2- Adjust the value of LA. Does the frequency of output signal change? Why?

Frequency of output signal…….. because ……
……
Oscillation frequency is determined by……

EXPERIMENTS 10.5

EXAMINATION OF CRYSTAL OSCILLATOR

EXPERIMENTAL PROCEDURE: Plug the Y-0016/014 module. Make the circuit connections as in figure 10.5.

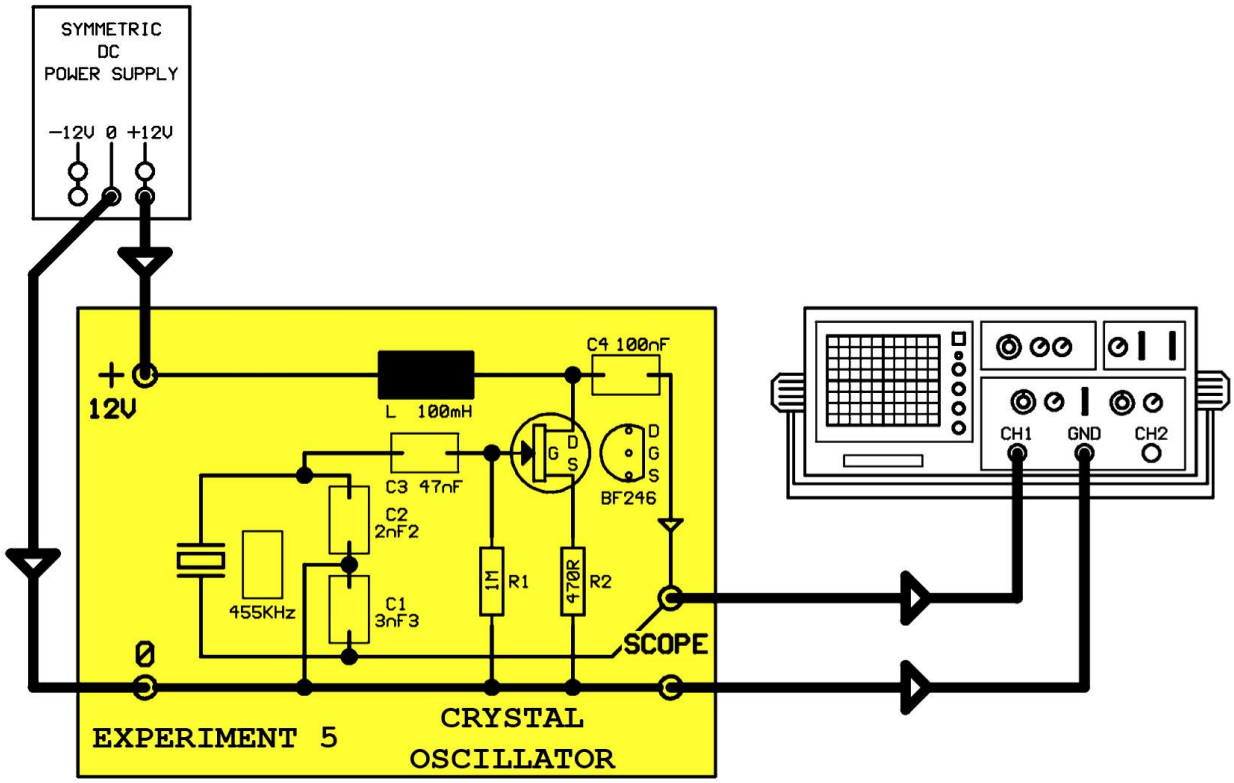

Figure 10.5

1- *Apply energy to circuit. Define the output signal.*

Output signal is …….

2- *Measure the oscillation frequency. Why is it at that value, explain?*

Frequency of output signal is ……KHz. *Frequency of crystal is ……..KHz.* *Frequency of crystal is equal to ……*

3- *Measure the output signal amplitude.*

Output signal amplitude is between peak to peak Vopp≅…….V - ……. V.

EXPERIMENT 10.6

EXAMINATION OF WIEN BRIDGE OSCILLATOR

EXPERIMENTAL PROCEDURE: Plug the Y-0016/014 module. Make the circuit connections as in figure 10.6.

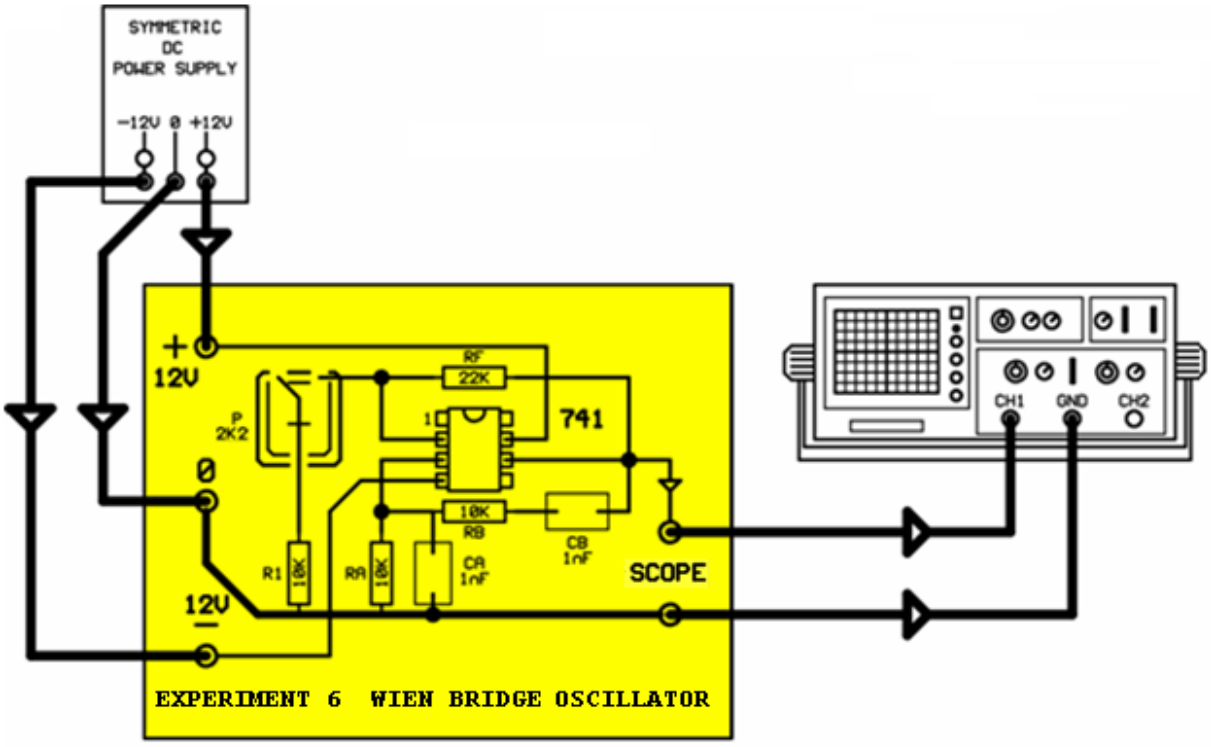

Figure 10.6

1- Apply energy to circuit. Define the output signal

NOTE: If there is interruption of negative or positive peak to peak values of output signal, adjust the P trimpot and make sure that the signal is smooth.

Output signal is ……..

2- *Does the P trimpot affect output amplitude? Why?*

3- Measure the output signal frequency.

*Output signal frequency is **Fo**=……**KHz.***

4- RA=RB=10K and CA=CB=1nF, so, calculate the oscillation frequency. Compare the result with the value at oscilloscope.

Mathematically oscillation frequency:

$$Fo = \frac{1}{2\pi RC} =$$

F0=…… Hz

Two results are ……..