PART 9

OSCILLATORS

1. Examination of RC Phase Shift Oscillators (14.1)
2. Examination of LC Oscillators (14.2)
3. Examination of Parallel Hartley Oscillators (14.3)

MODULE Y-0016/014

EXPERIMENT 9.1

EXAMINATION OF RC PHASE SHIFT OSCILLATOR

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/014 module. Make the circuit connections as in figure 18.6.

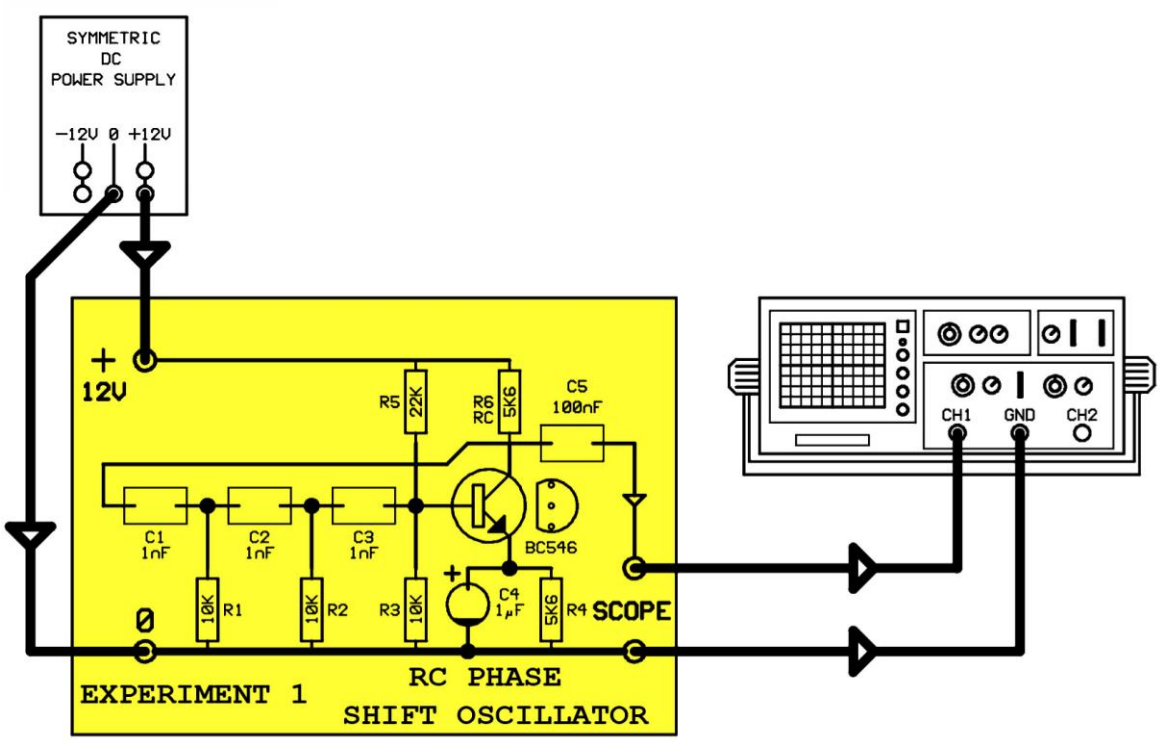

Figure 18.6

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: 9.2
EXAMINATION OF LC OSCILLATOR

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/014 module. Make the circuit connections as in figure 18.8

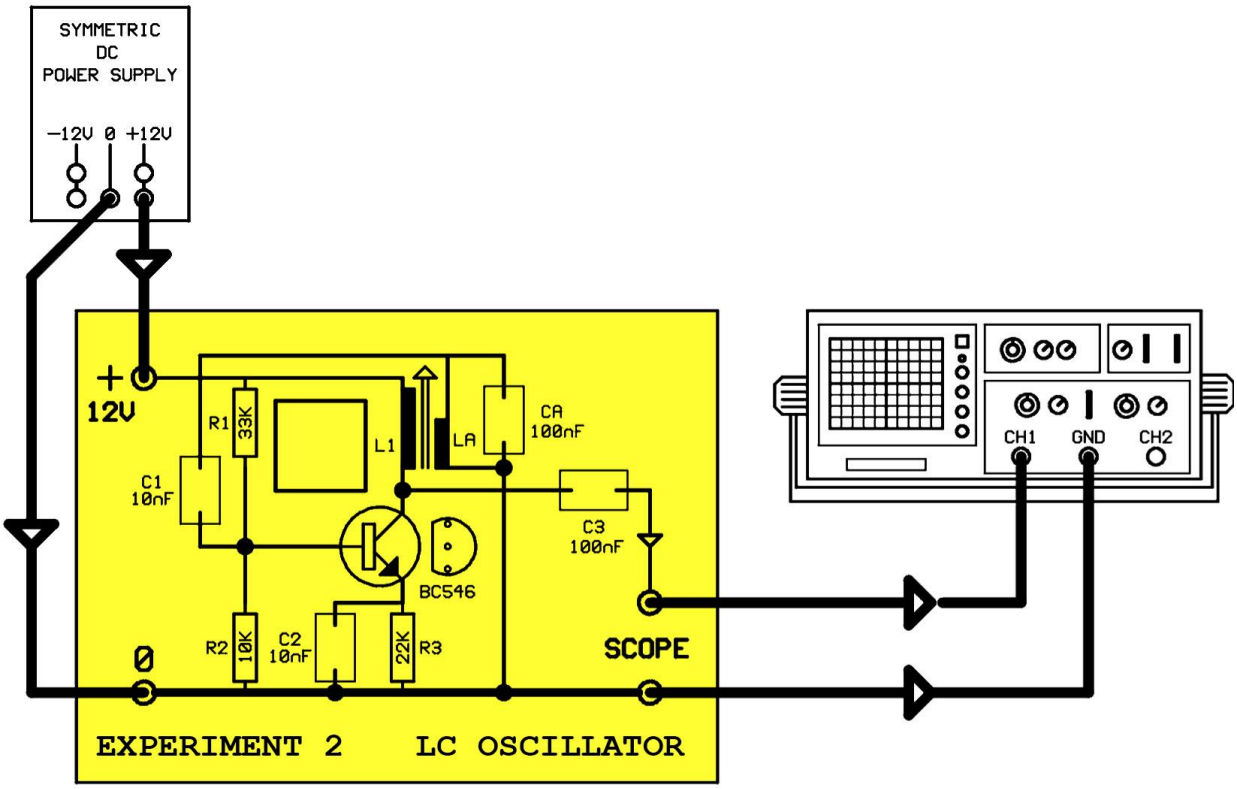

Figure 18.8

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

Output signal is ……..

2- Adjust the core of transformator with the help of a screwdriver carefully. Calculate the frequency band between which the oscillation is carried out.

Oscillator makes oscillation between frequency values of …….KHz and …….KHz.

EXPERIMENT 9.3

EXAMINATION OF PARALLEL HARTLEY OSCILLATOR

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/014 module. Make the circuit connections as in figure 18.11

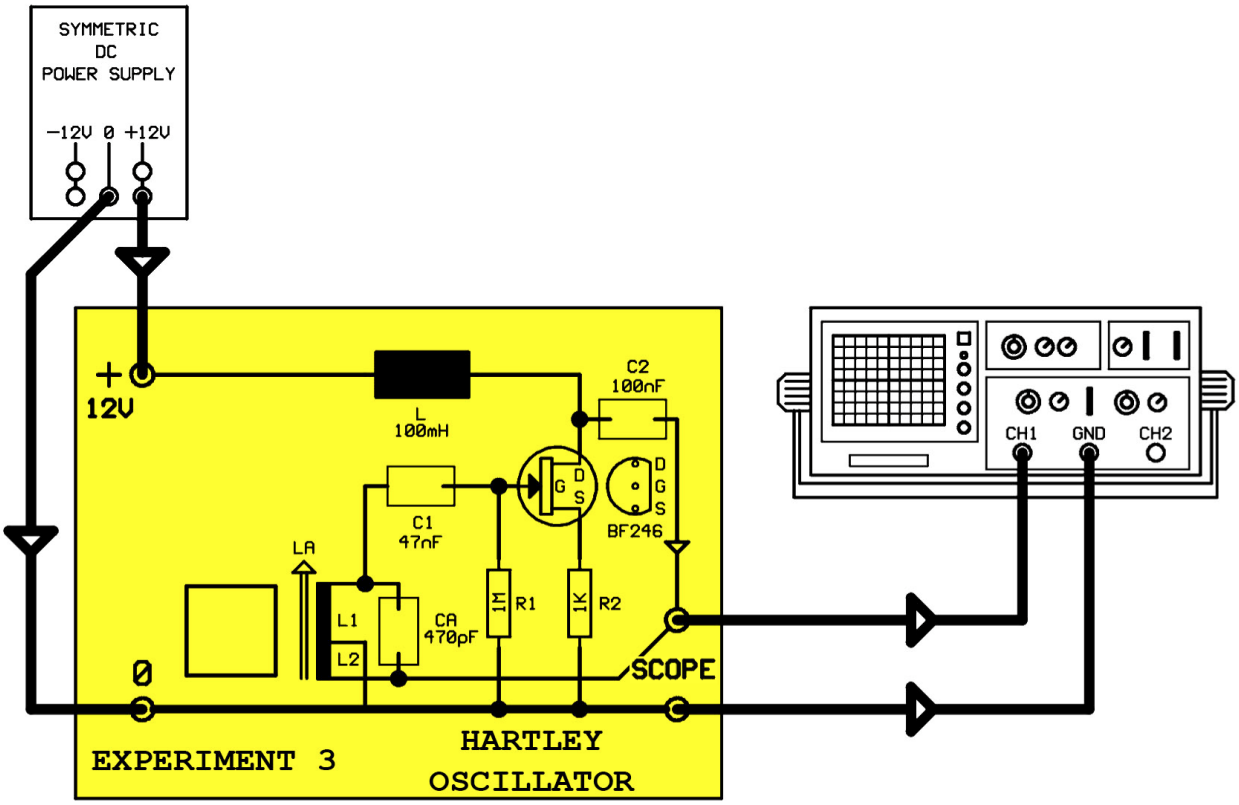

Figure 18.11

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

Output signal is …….

2- *Adjust the core of transformator with the help of a screwdriver carefully. Calculate the frequency band between which the oscillation is carried out?*

Oscillator makes oscillation between frequency values of ……KHz and ……KHz.

PART 10

OSCILLATORS

1. Examination of Colpitts Oscillators (14.4)
2. Examination of Crystal Oscillators (14.5)
3. Examination of Wien Oscillators (14.6)

MODULE Y-0016/014

EXPERIMENT 9.4
EXAMINATION OF COLPITTS OSCILLATOR

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/014 module. Make the circuit connections as in figure 18.13

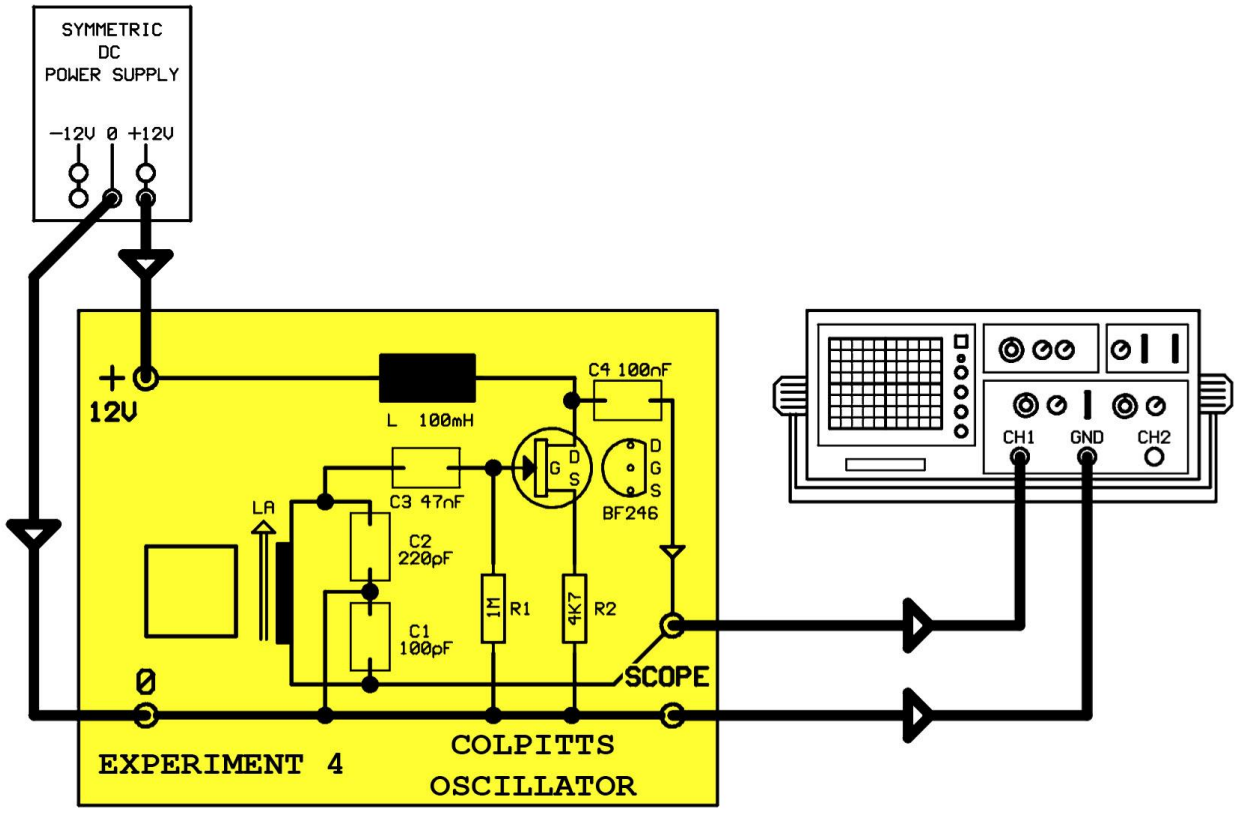

Figure 18.13

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 core of coil with a screwdriver carefully.

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

2- Adjust the core of transformer with the help of a screwdriver carefully. Does the frequency of output signal change? Why?

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

EXPERIMENTS 9.5

EXAMINATION OF CRYSTAL OSCILLATOR

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/014 module. Make the circuit connections as in figure 18.16

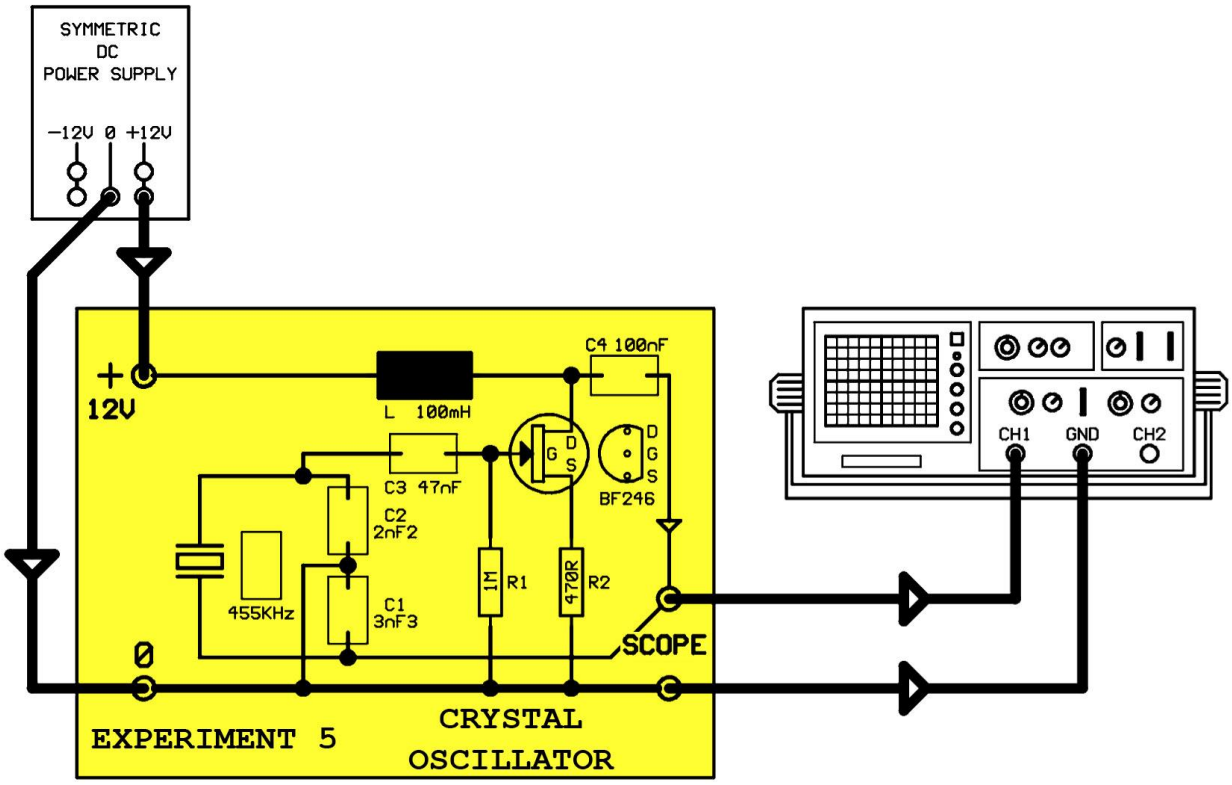

Figure 18.16

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 9.6
EXAMINATION OF WIEN BRIDGE OSCILLATOR

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/014 module. Make the circuit connections as in figure 18.18

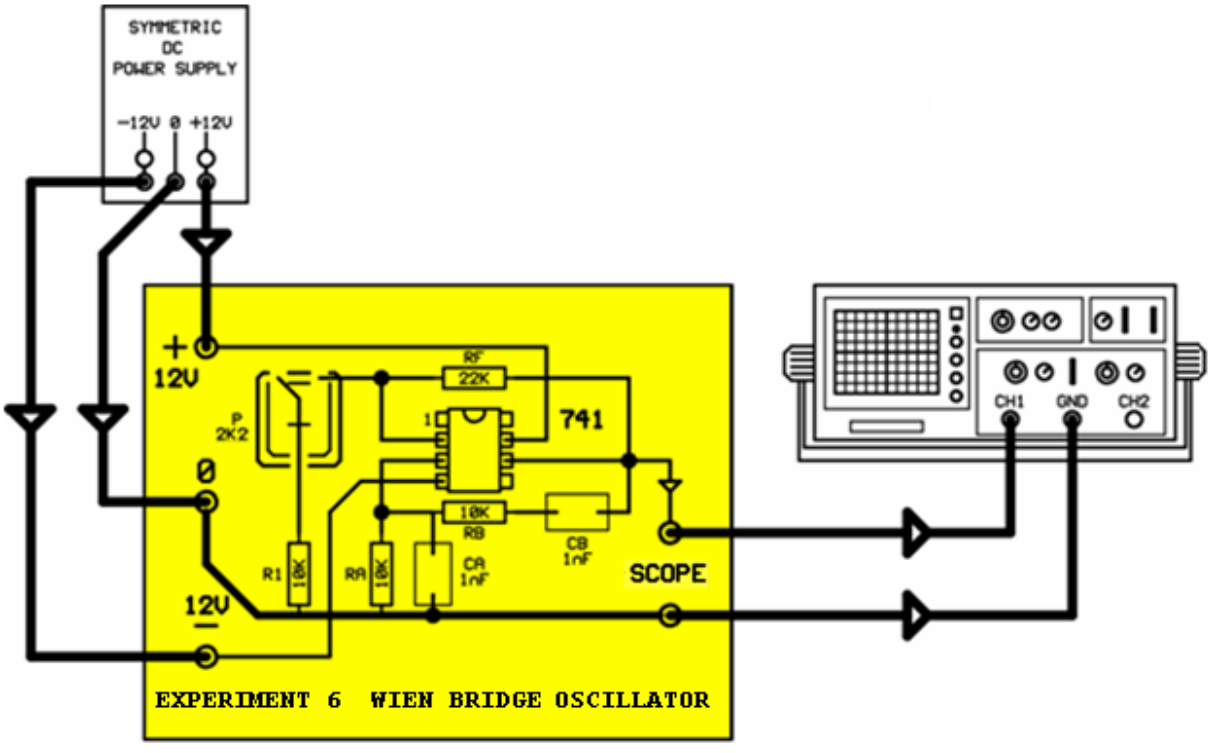

Figure 18.18

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 with a screwdriver 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 ……..*