

# **ELECTRONICS LAB.**

## **PART 9 EXPERIMENTS**

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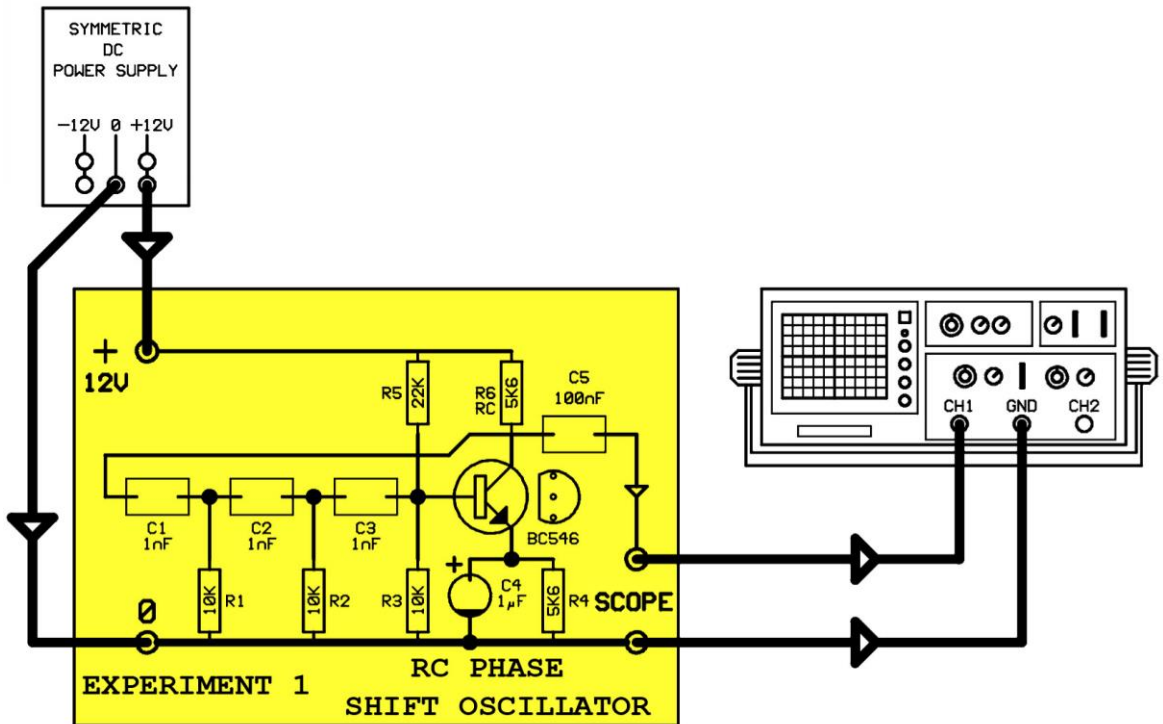
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# EXPERIMENT 9.1

## 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 **V<sub>opp</sub>**=.....Volt*

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

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

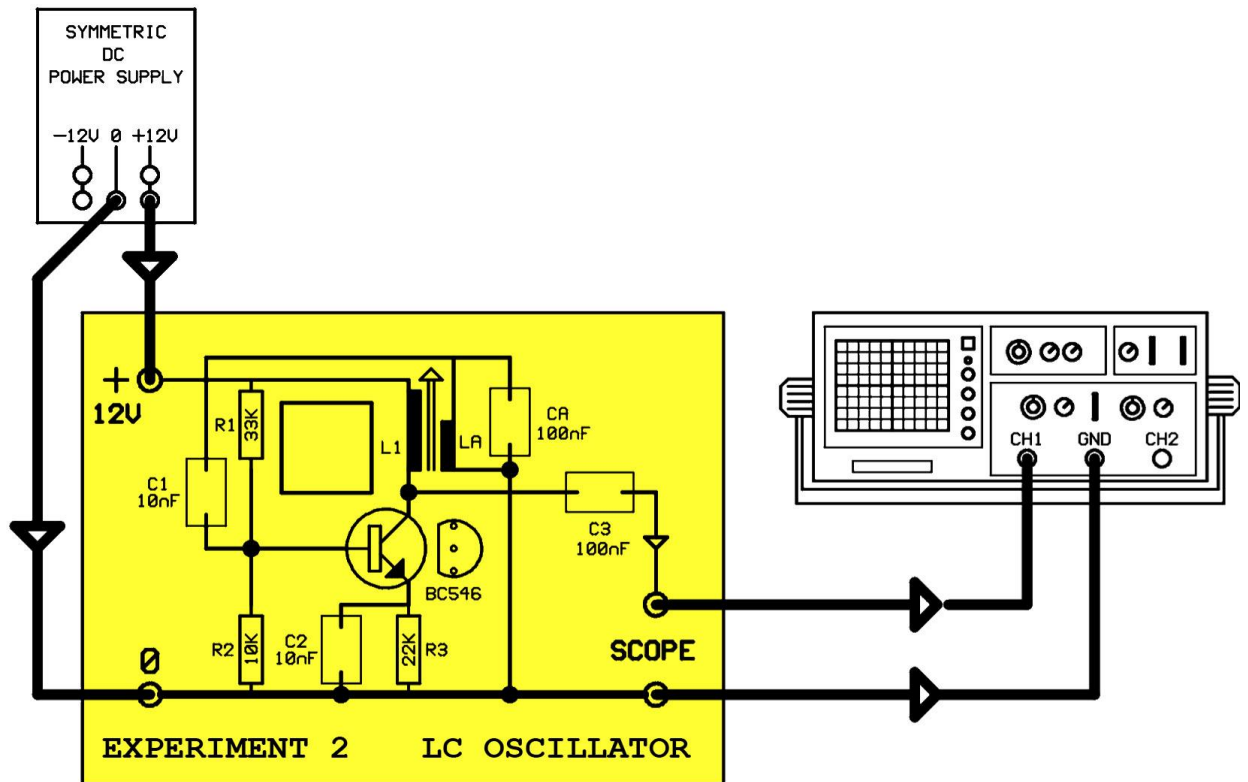
$$F_o = \dots\dots\dots KHz$$

## 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 transformer with the help of a screwdriver carefully. Calculate the frequency band between which the oscillation is carried out.

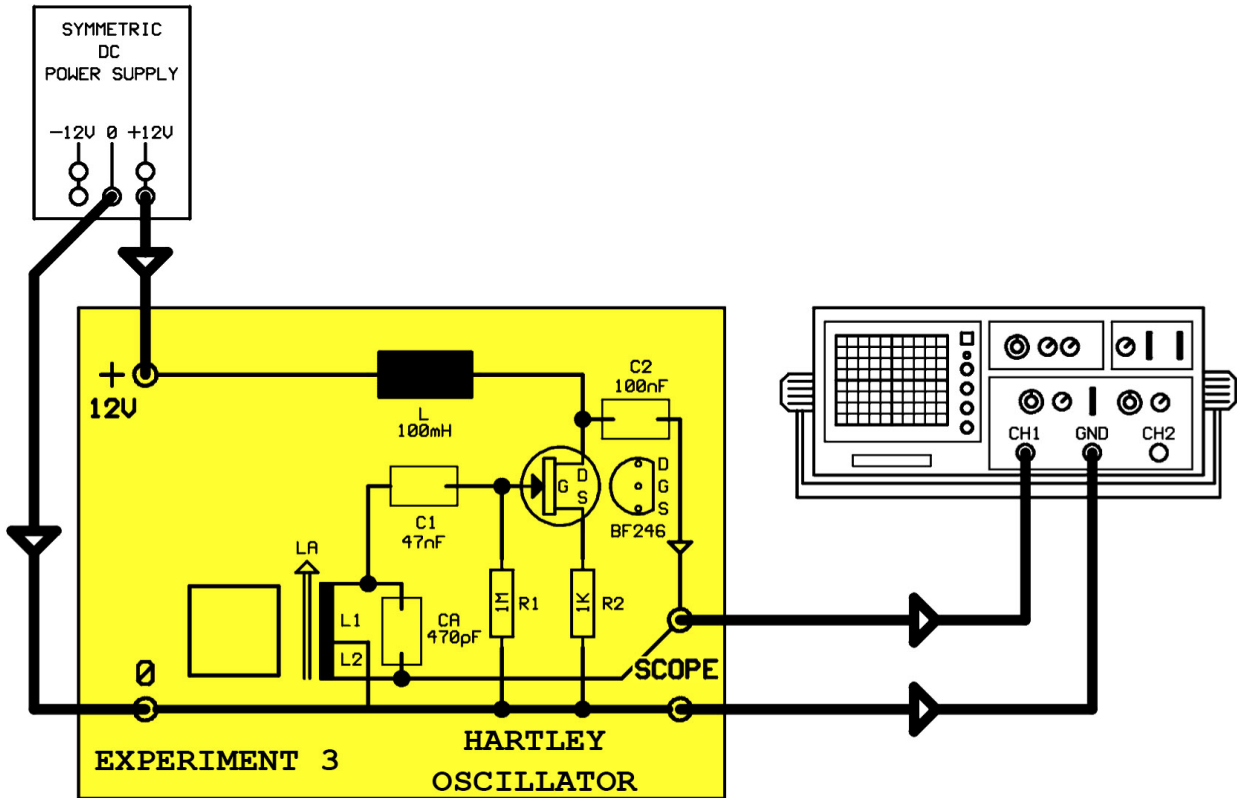
*Oscillator makes oscillation between frequency values of .....KHz and .....KHz.*

# 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 transformer with the help of a screwdriver carefully. Calculate the frequency band between which the oscillation is carried out?

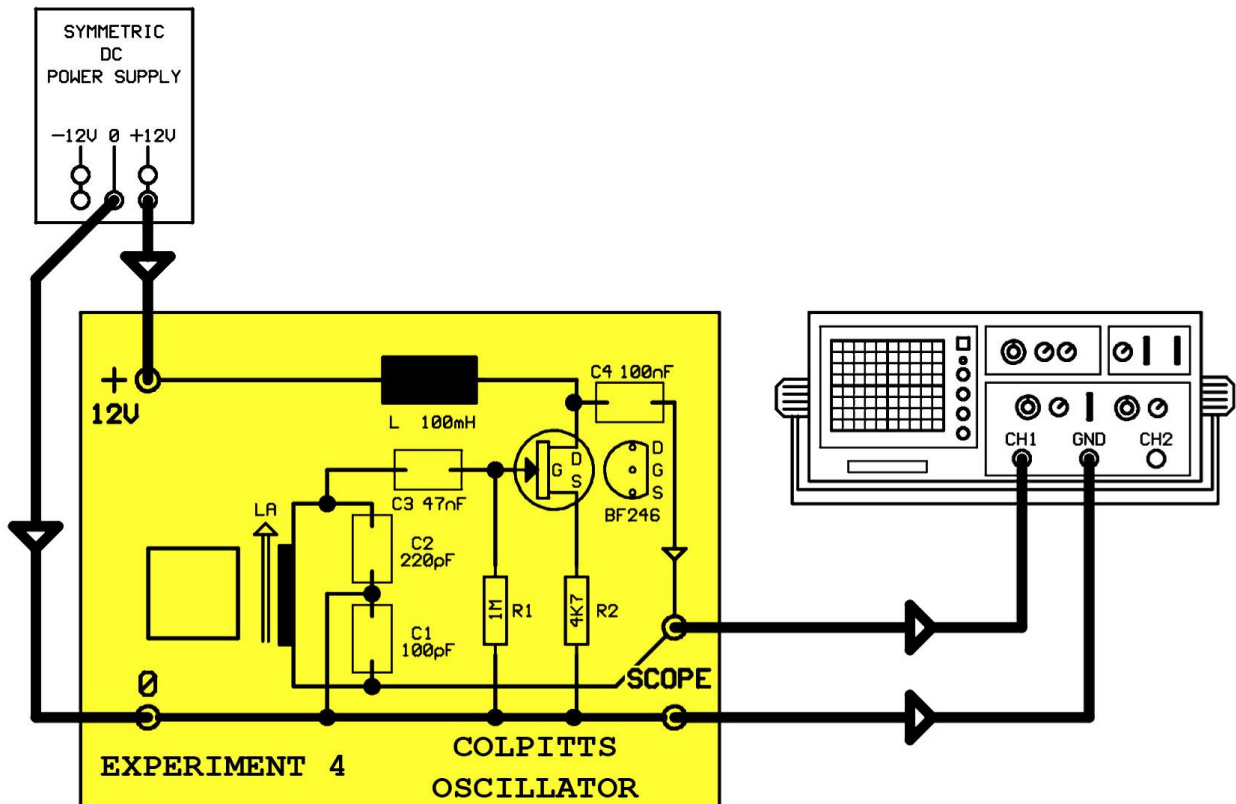
*Oscillator makes oscillation between frequency values of .....KHz and .....KHz.*

# EXPERIMENT 9.4

## 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 .....

.....

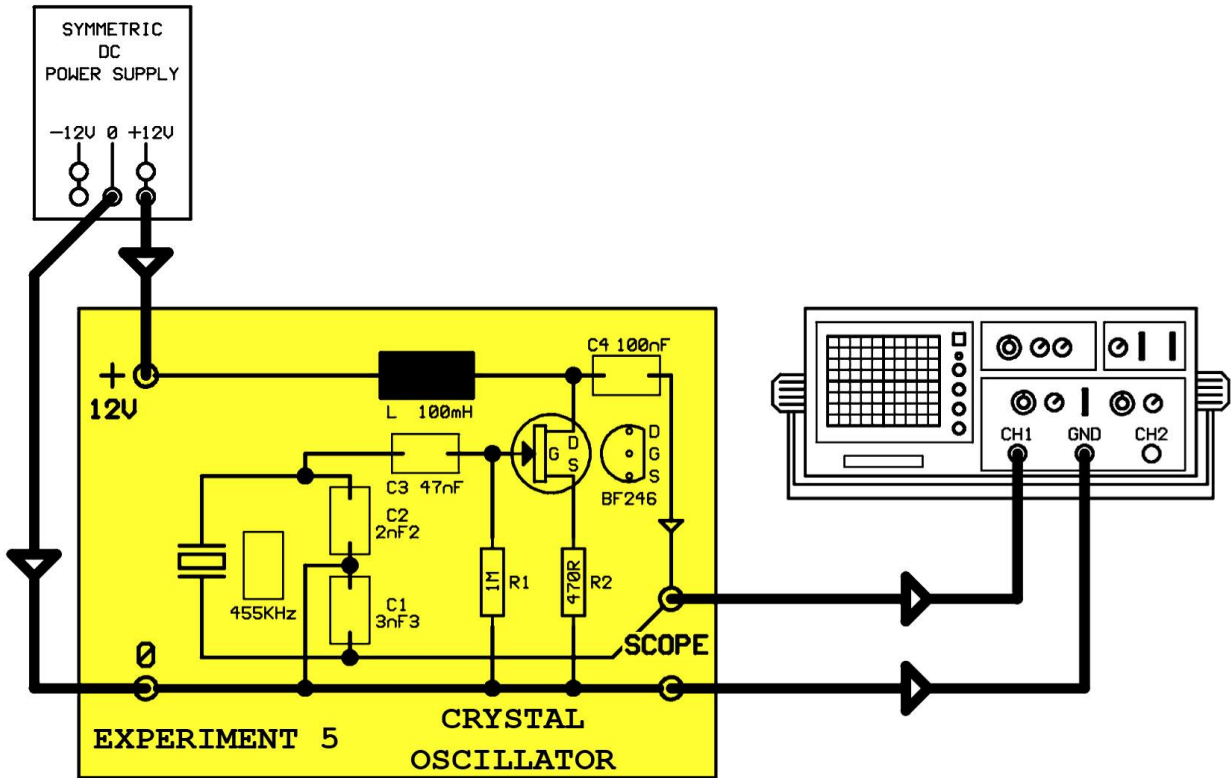
Oscillation frequency is determined by.....

# 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.

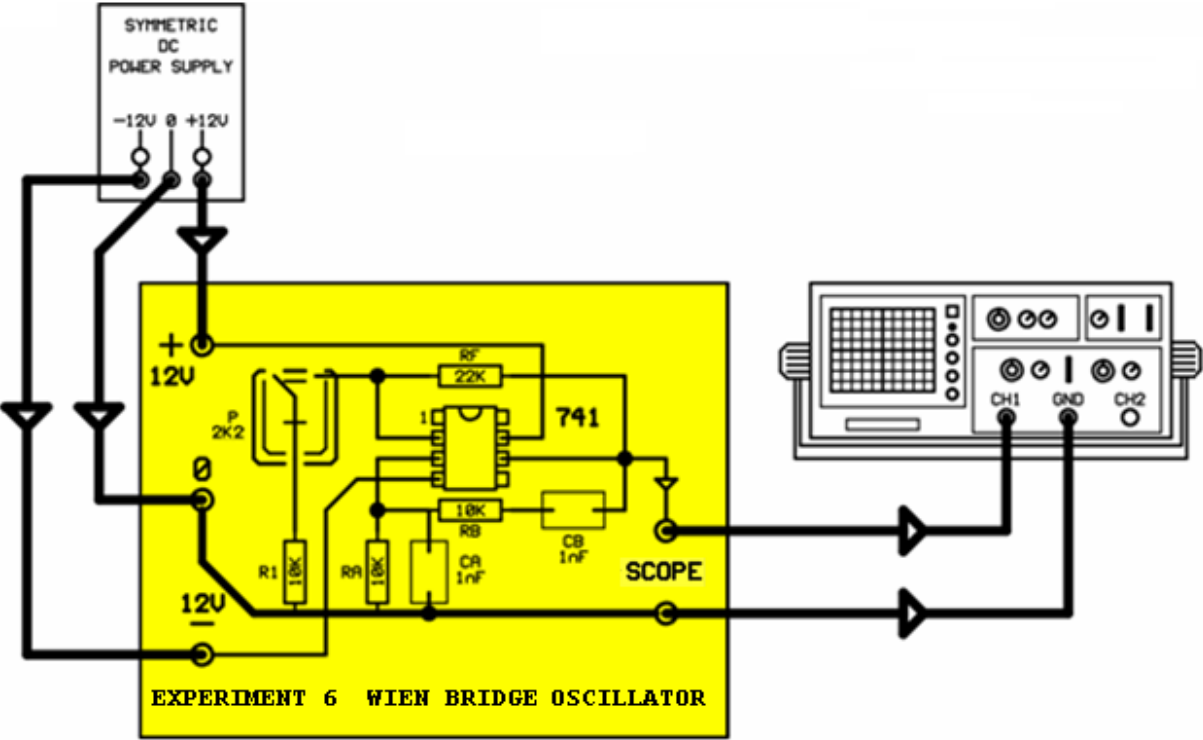
Output signal amplitude is between peak to peak  $V_{opp} \cong \dots\dots V - \dots\dots V$ .

# 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 **F<sub>o</sub>**=.....**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:

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

F<sub>0</sub>=..... Hz

Two results are .....