

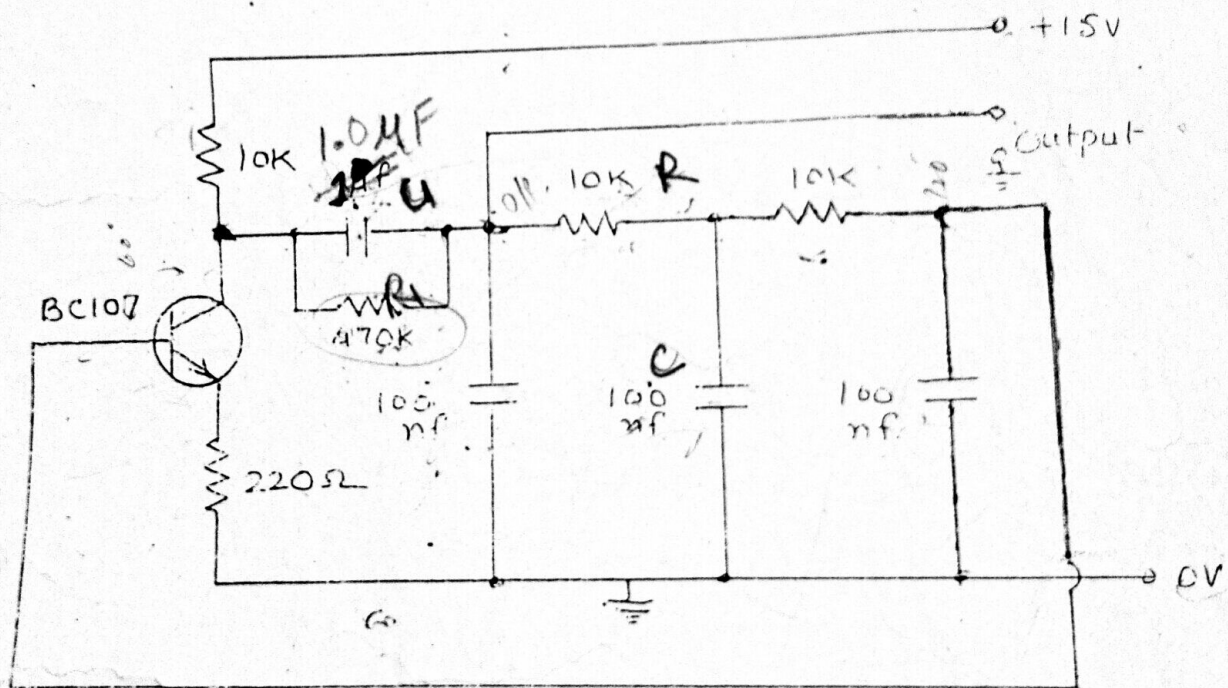
EXPERIMENT NO. 8

OBJECTIVE: Design and study RC - phase shift oscillator. Find the frequency and compare with calculated frequency.

APPARATUS REQUIRED: Bread Board, Regulated power supply, CRO, Transistor BC-107, Resistances, Capacitors.

THEORY: The RC phase shift oscillator is one of a group of RC oscillators in which three (3) RC combinations in series act as the feedback circuit; each introducing a phase shift of 60° to make a total of 180° . The transistor in CE configuration introduces a phase shift of an additional 180° making the total phase shift in the feedback signal 0° or 360° . Hence feedback is positive and with proper amplitude it can make the system oscillate and generate sinusoidal output.

CIRCUIT DIAGRAM:



PROCEDURE:

1. Connect the circuit as shown in figure 1 on the breadboard.
2. Connect the +15V power supply to the collector of the transistor.
3. Ensure that all the connections should be properly connected and should be tight.
4. Connect the CRO to the circuit to take the output.
5. Switch on the power supply.
6. Measure the amplitude of the waveform that appears on the CRO.
7. Also determine the frequency of the waveform.

OBSERVATIONS AND CALCULATIONS:

Amplitude of the waveform :

Frequency of the waveform :

Theoretically the frequency is calculated as : $f(\text{Hz}) = 1/(2\pi R C \sqrt{6})$

F(Hz) =

Measured frequency is :

f(Hz) =

$$f(\text{Hz}) = \frac{1}{2\pi} \sqrt{\frac{5R_1 C_1 + 3RC}{R^2 R_1 C^2 [C + C_1]}}$$