Exp- 06. WEIN BRIDGE OSCILLATOR

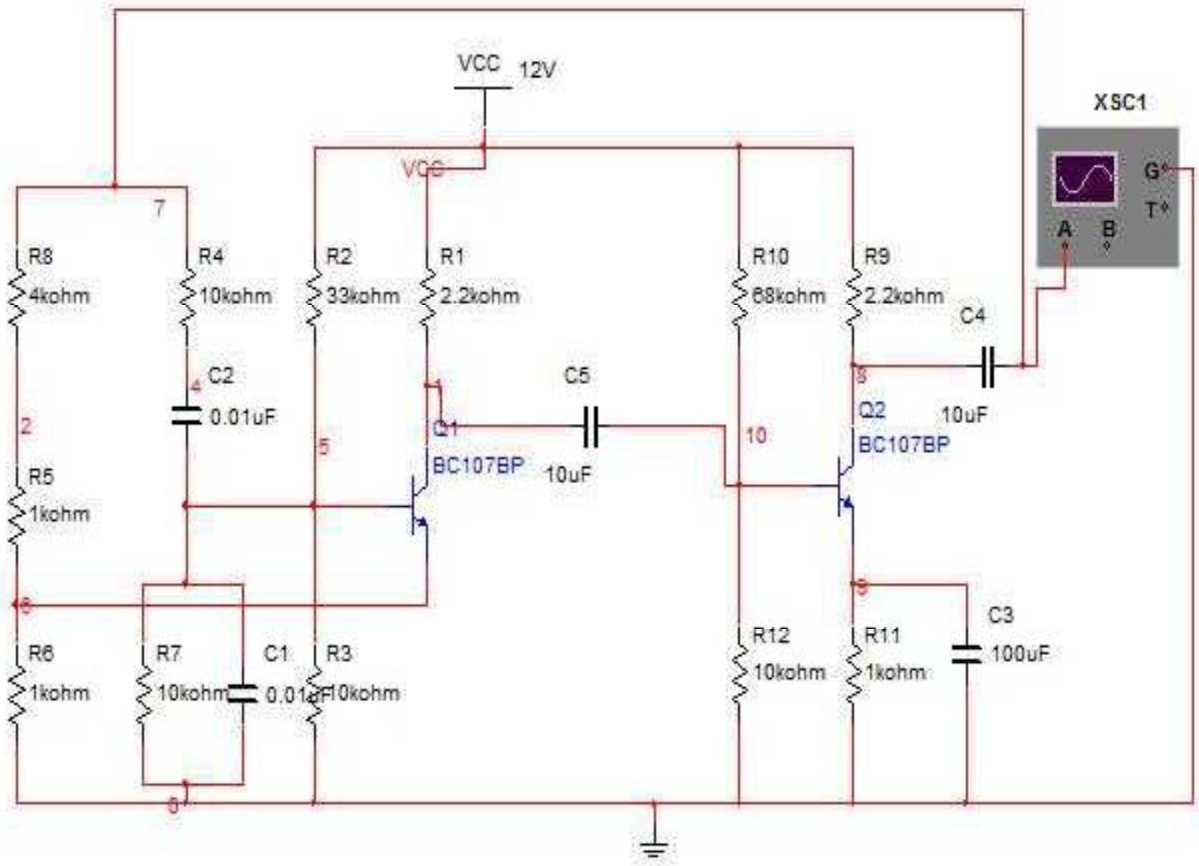
OBJECTIVE::

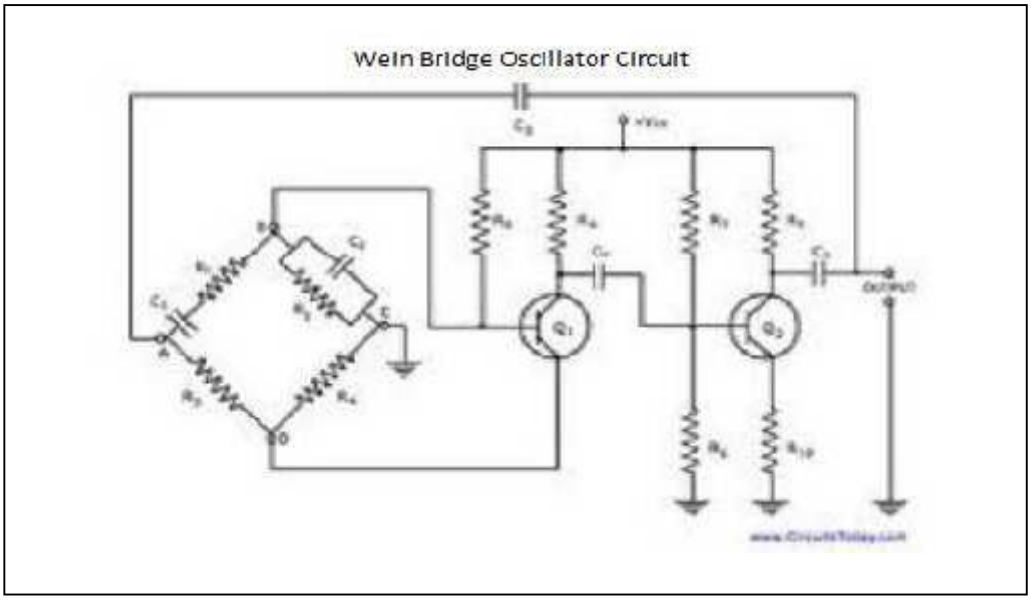
To study and calculate frequency of oscillations of Wein Bridge Oscillator and compare it with theoretical value.

APPARATUS:

MULTISIM 2007 SOFTWARE PC

CIRCUITDIAGRAM:





Circuit highlighting the Bridge formation.

THEORY:

The Wein Bridge oscillator is a standard circuit for generating low frequencies in the range of 10 Hz to 1MHz.The method used for getting +ve feedback in Wein Bridge oscillator is to use two stages of an RC-coupled amplifier. Since one stage of the RC-coupled amplifier introduces a phase shift of 180 deg, two stages will introduces a phase shift of 360 deg. At the frequency of oscillations *f* the +ve feedback network shown in fig makes the input & output in the phase. The formula for frequency of oscillations is given as

$$f \qquad {}_1C_1R_2C_2$$

If $R_1C_1 = R_2.C_2 = RC$, then f = 1/2 RC

$$R_4C_2R_7C_1$$

PROCEDURE:

1. Start MULTISIM. A blank circuit window will appear on the screen along with a component tool bar.
2. Using component tool bar place all the components on the circuit window and wire the circuit.
3. Feed the output of the oscillator to a C.R.O by making adjustments in the Potentiometer connected in the +ve feedback loop, try to obtain a stable sine wave.
4. Measure the time period of the waveform obtained on CRO. & calculate the Frequency of oscillations.
5. Repeat the procedure for different values of capacitances.

OBSERVATION:

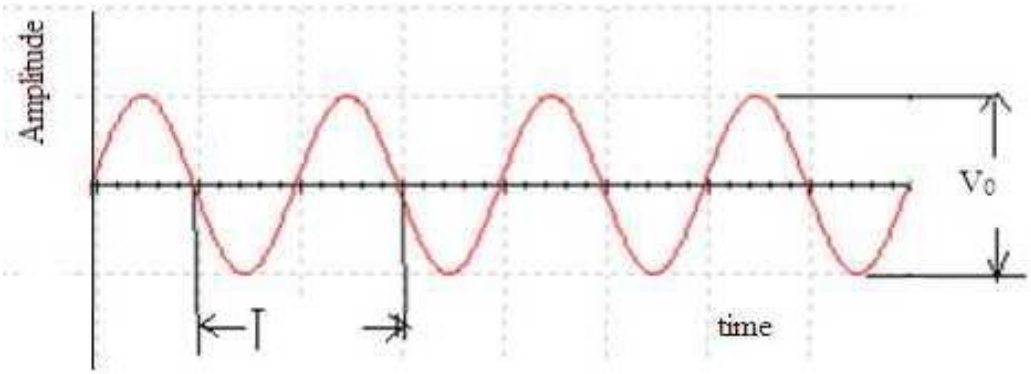
Given R=10kΩ, C=0.01μF

$\mathbf{f_T}$ = 1/ 2πRC

$\mathbf{f_P} = \frac{1}{T}$ =

Amplitude,V_0 = **MODEL**

WAVE FORMS:



RESULT:

The frequency of oscillations of the Wein Bridge oscillator is calculated and is verified.