DESIGN OF A WIEN BRIGDE OSCILLATOR

AIM

1. To design a Wien bridge oscillator for a given frequency of oscillation.
2. To stabilize the amplitude of the designed oscillator.

BASIC OSCILLATOR

For the circuit shown in figure 1, derive condition for sustained oscillation and obtain an expression for the frequency of oscillation.
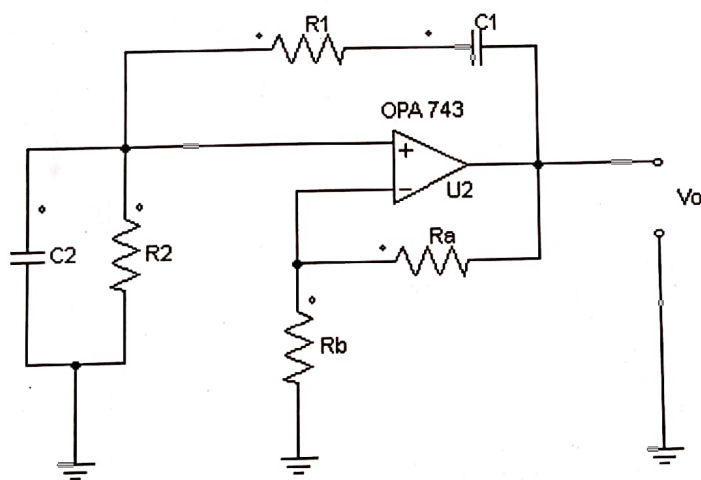

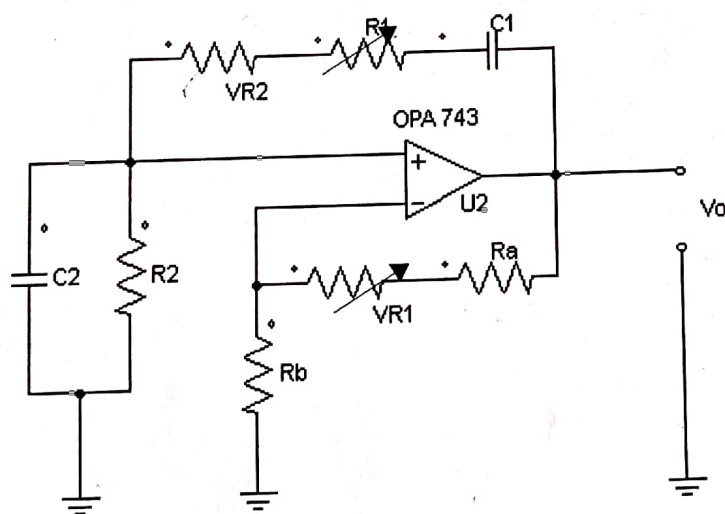Fig. No. 1: Basic Oscillator Circuit

Figure 1. Basic Oscillator Circuit

Figure 2. Basic Oscillator circuit 2

PROCEDURE:

1. Obtain the design value from Table No 1, and calculate the component values.

2. Connect the test circuit.

3. Determine and plot the variation of the output amplitude with V_{cc}.

4. Observe the effect of varying VR1 and VR2.

Table No. 1

GROUP	Design Frequency / (kHz)
CE01,20	10
CE02,19	12
CE03,18	13
CE04,17	15
CE05,16	17
CE06,15	19
CE07,14	21
CE08,13	22
CE09,12	23
CE10,11	26

Results

1. Draw the output waveforms.

2. Measure the obtained frequency.

DISCUSSION:

1. How you would vary the frequency of oscillation and the amplitude of the output.

2. How you would stabilize the amplitude of the output of the oscillator.

3. How do the oscillations build up initially although the circuit has no externally applied input?

4. State some applications where oscillators are employed?

REFERENCES:

1. 1. Integrated Electronics, *Analogue and Digital Circuit and Systems* by Jacob Millman and Christos C. Halkias