Experiment Name:To measure frequency by Wien's bridge

Apparatus Required:

1. Wien`s Bridge Trainer

2. Multi meter

3. 2mm Patch cords

Theory:

In this bridge circuit, there is a lead-lag network. Balancing of the bridge is easier because satisfying the phase angle equality condition can be achieved. This bridge can also be used to determine the frequency of the AC input in terms of the component values of the bridge circuit. In this AC bridge, there is no inductor. Inductive losses because of stray fields cause problems in balancing of the bridge. Owing to the absence of L in the circuit, this can be effectively used for determining the frequency f of the AC input..
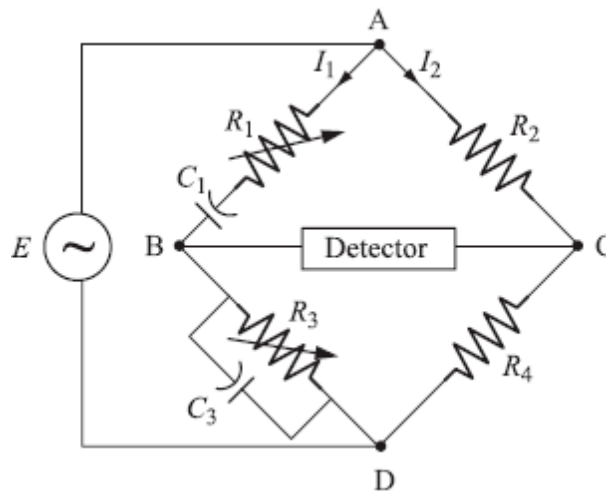
Procedure:

1. Connect mains cord to the Trainer.

2. Connect terminal 1 to 4(for evaluating unknown capacitance Cx1).

3. Rotate variable resistance R1 towards anti clockwise direction.

4. Select Frequency Selector f or any desired range of frequency.

· 100 Hz to 1 kHz

· 1 kHz to 10 kHz

· 10 kHz to 60 kHz

7. For example 2 kHz frequency, select frequency select or between the ranges1 kHz-10 kHz.

8. Use Frequency Variable knob to set 2 kHz frequency on display screen.

9. Connect terminal 19 to 6 and 20 to 7.

10. Now switch 'On' the power supply.

11. Set toggle of null detector towards 'on' condition.

12. Vary Amplitude Variable f or enough sound of speaker.

13. Vary resistance R1 towards clockwise direction slowly. (Sound diminishes). Keep varying R1 until you get very low sound or null sound (null condition).

16. Now remove the patch cord between terminal 1 & 4 and record the value of R1 in the observation table using multimeter.

Observation Table:

S No.	R1	R2	C1	C2	f
1					
2					
3					
4					
5					

Calculations:

$$f = \frac{1}{2\pi\sqrt{R_1 R_3 C_1 C_3}}$$

Precaution:

1. Handle all the equipments with care

2. Make connections according to circuit diagram

3. Take the readings carefully& the connections should be tight