13.SCHERING'S BRIDGE

Objective:

To determine the unknown value of capacitance using schering's bridge.

Apparatus:

Software: Lab view software.

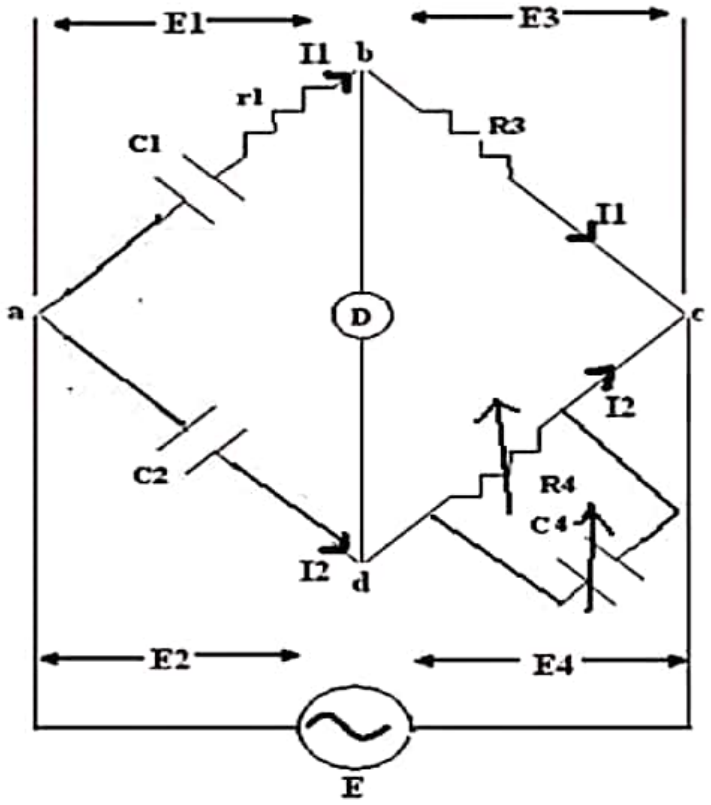
Hardware:	Name of the apparatus	Quantity
	Bread board	1 No
	Resistors	2 No
	Variable Resistor	1 No
	Capacitors	3No
	Digital Multimeter	1 No

Theory:

Schering bridge is one of the most important of the a.c. bridge. It is extensively used in measurement of capacitance.

At balance, $\{r_1 + 1/(j\omega C_1)\}\{R_4/(1+j\omega C_4 R_4)\} = R_3/(j\omega C_2)$

$\{r_1 + 1/(j\omega C_1)\} R_4 = R_3/(j\omega C_2) * \{(1+j\omega C_4 R_4)\}$



$r_1R_4 - \{(jR_4)/(\omega C_1)\} = \{(-jR_3)/(\omega C_2)\} + \{(R_3R_4C_4)/(C_2)\}$

Equating real and imaginary terms,

$r_1 = R_3C_4/C_2$ and $C_1 = C_2R_4/R_3$

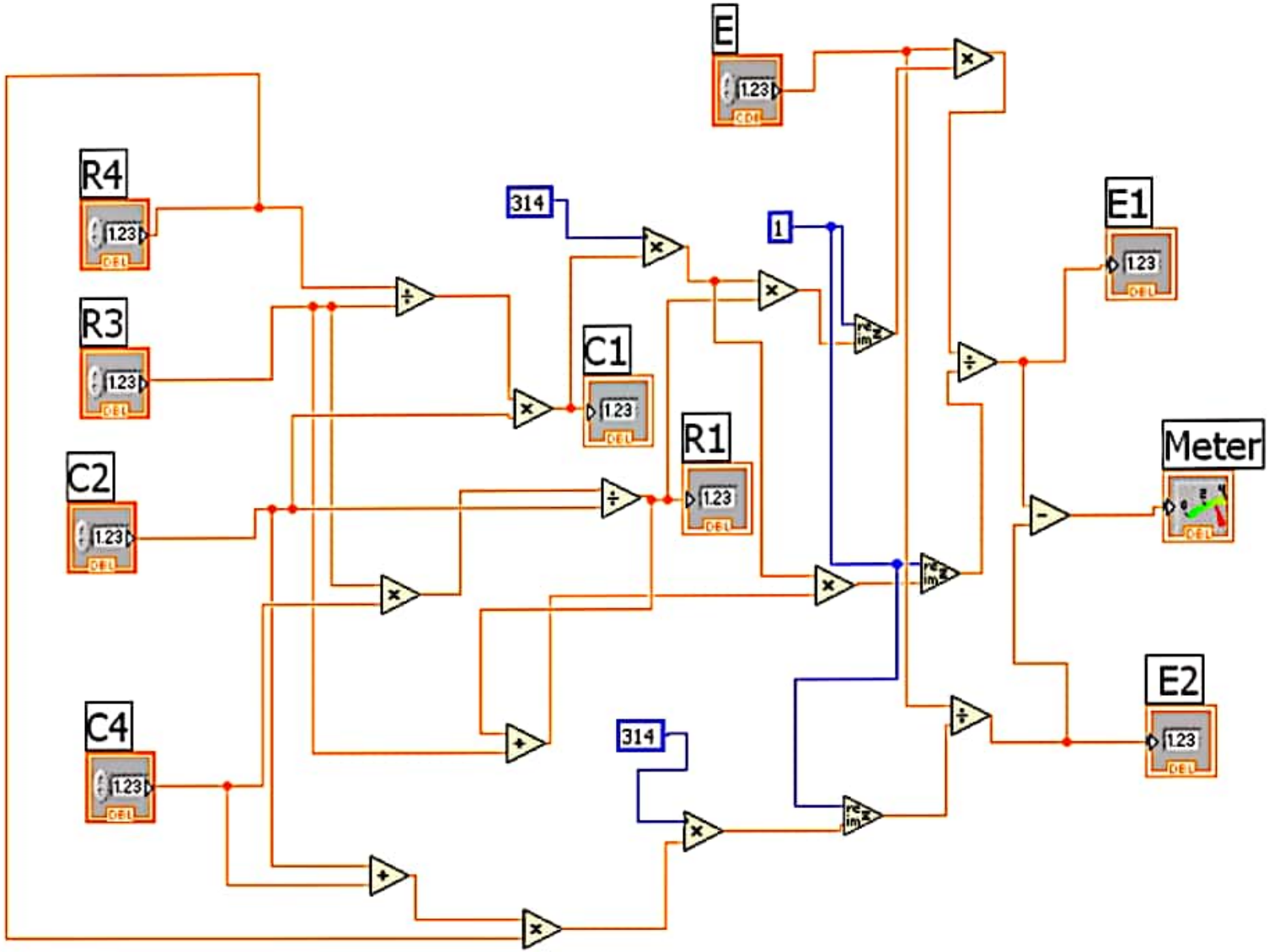
Procedure:

1. Connect the circuit as shown in the figure.
2. Select any value of C_1.
3. Connect the multimeter between ground and output of imbalance amplifier.
4. Vary R_4 and C_4, from minimum position, in clockwise direction.
5. If the selection of C_1 is correct the balance point can be obtained at minimum position.

6. If that is not the case, select another C_1.
7. Calculate the Capacitance by substituting known values.

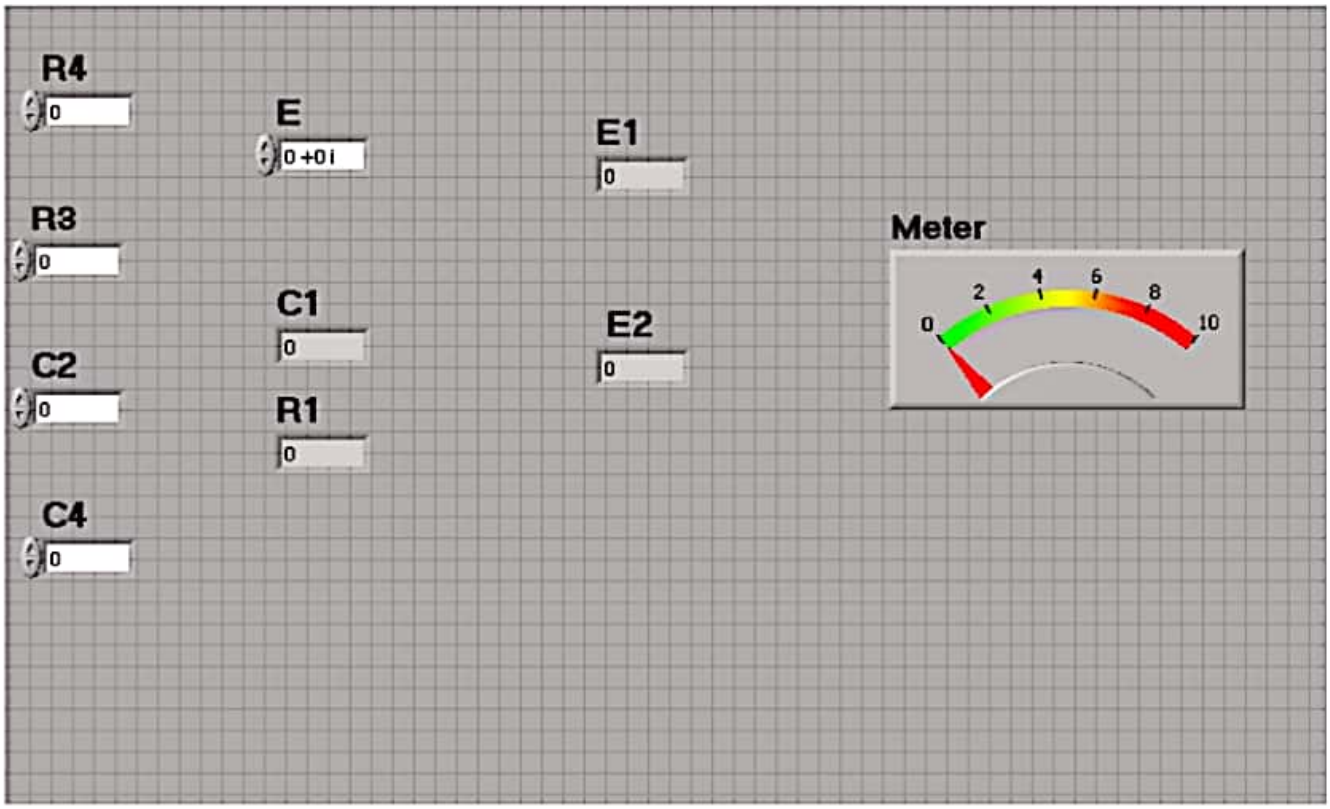
Observation:

C_4	C_1	C_2	R_3	R_4



SCHERING BRIDGE

Front Panel in Labview:



Result:

Hence the balanced condition of schering bridge is obtained and unknown value of capacitance is found.