Experiment No. 5

Objective: Measurement of capacitance by Schering bridge
Apparatus Used:

S. No.	Name of the apparatus	Quantity
1	Lab trainer kit	1
2	Multimeter	1
3	Unknown inductor	1

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

At balance, $\{r1+ 1/(j\omega C1)\}$ $\{R4/(1+j\omega C4R4)\} = R3/(j\omega C2)$

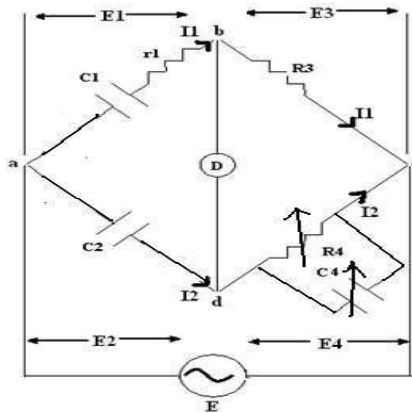$\{r1+ 1/(j\omega C1)\}$ $R4 = R3/(j\omega C2) *\{(1+j\omega C4R4)\}$

$r1R4 - \{(jR4)/(\omega C1)\} = \{ (-jR3)/(\omega C2)\} + \{(R3R4C4)/(C2)\}$

Equating real and imaginary terms,

$r1 = R3C4/C2$ and $C1 = C2R4/R3$

Circuit Diagram:

Procedure:

1. Connect the circuit as shown in the figure.
2. Select any value of C1.
3. Connect the Multimeter between ground and output of imbalance amplifier.
4. Vary R4 and C4, from minimum position, in clockwise direction.
5. If the selection of C1 is correct the balance point can be obtained at minimum position.

6. If that is not the case, select another C1.

7. Calculate the Capacitance by substituting known values.

Observation Table:

S.NO	C4	C1	C2	R3	R4

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