Experiment No. 1

Objective: To determine unknown inductance of a given coil by Maxwell's bridge method.

Apparatus Used:

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

Theory: This bridge circuit measures an inductance by comparison with a variable standard self inductance.
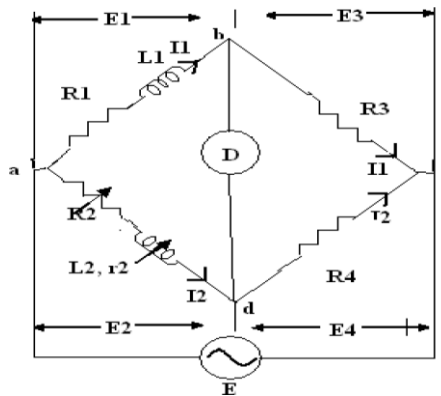The connections and the phasor diagrams for balance conditions are shown below.
Let, $L1$ = unknown inductance of resistance $R1$,
$L2$ = variable inductance of fixed resistance $r2$,
$R2$ = variable resistance connected in series with inductor $L2$,
$R3$, $R4$ = known non-inductive resistances.

Circuit Diagram:

At balance, $L1 = R3L2/R4$, $R1 = R3(R2+r2)/R4$.

Procedure:

1. Connect the circuit as shown in the figure.
2. Connect the unknown inductance in L1.
3. Connect the multimeter between ground and output of imbalance amplifier.
4. Vary R2, from minimum position, in clockwise direction.
5. If the selection of R2 is correct the balance point can be obtained at minimum position.
6. Vary R2 for fine balance adjustment.

Observation Table:

S. No.	R2	R3	C1	L1= R3L2 / R4	True value of L1
1					
2					
3					

Result: Actual and practical values of Inductances are found to be nearly equal.