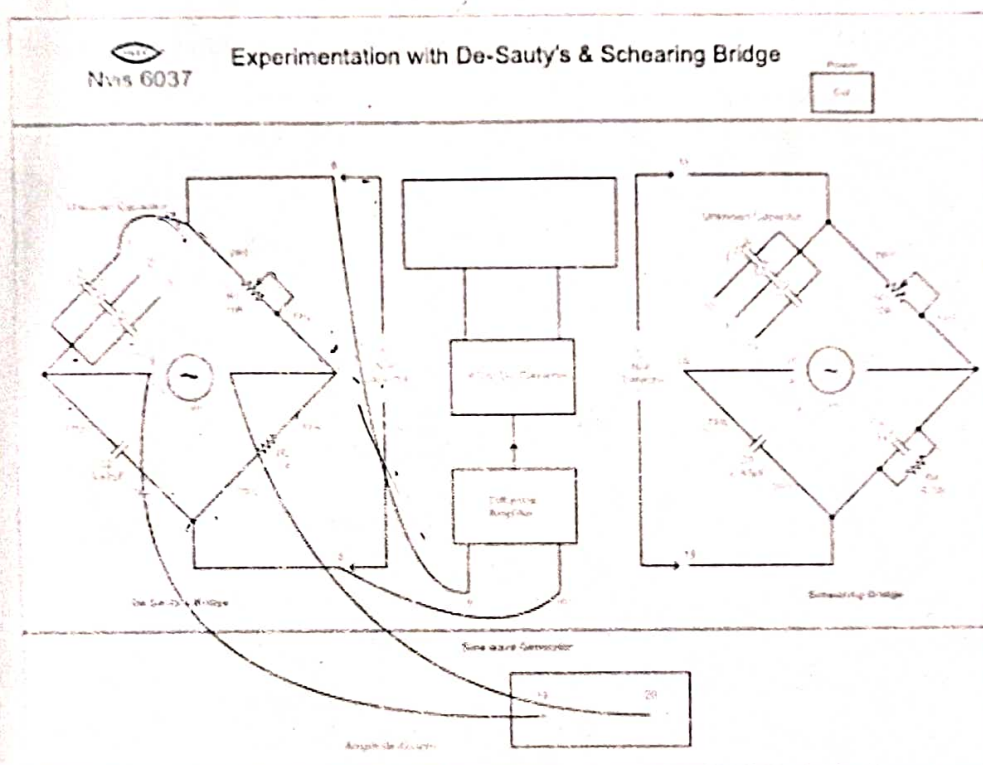## Experiment 1

Objective:

Determination of unknown capacitance using De Sauty's Bridge method.

Items Required:

1. De Sauty's Bridge Trainer
2. 2mm Patch cords
3. Multimeter

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 anticlockwise direction.

4. Connect null detector (i.e. terminal 5 to 9 and 8 to 10).

5. Set Amplitude Control knob in fully clockwise direction.

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

7. Now switch 'On' the power supply.

8. Now vary the **R1** towards clockwise direction very precisely until the Null Point is detected.

(**Null Point:** It is the point where the voltage is minimum and on rotating **R1** in any direction voltage always increases.)

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

10. Repeat above procedure for different value of unknown capacitors (i.e. Cx2 and Cx3).

11. Tabulate all the retrieved data in observation table below.

Observation Table:

S. No.	Unknown Capacitor	Resistance R1 ohm	Resistance R2 ohm	Capacitor C2 µF
1.	Cx1			
2.	Cx2			
3.	Cx3			

Handwritten note: Actual
0.1 µF.
0.22 µF
0.47 µF

Calculations

1. For unknown Capacitance Cx1:

$$CX1 = R_2 \times \frac{C_2}{R_1}$$

$$= 2.311 \text{ µF}$$

Handwritten: 0.08499 µF

2. For unknown Capacitance Cx2:

$$CX2 = R_2 \times \frac{C_2}{R_1}$$

$$= .944 \text{ µF}$$

Handwritten: 0.2078 µF

3. For unknown Capacitance Cx3:

$$CX3 = R_2 \times \frac{C_2}{R_1}$$

$$= .4324 \text{ µF}$$

Handwritten: 0.4936 µF

Handwritten: $\frac{1.0 k}{5.7 k} \times 0.47/µF$

.824 µF