Practical No: 03 **Determine area of irregular field using Digital Planimeter.**

I. Practical Significance:

It is easy to calculate the area of field with regular or definite shape with the help of formulae but in case of irregular shape it becomes tedious to calculate the area. Digital planimeter is the device which is used to calculate the area of irregular figures. For example in case of topographical maps where areas are having irregular shape, those areas can easily get calculated by digital planimeter.

II. Industry/Employer expected outcome(s):

- Determining the area of plan of any shape.

III. Course Level Learning Outcome (COs):

- CO 2 - Undertake cross staff and compass survey for the given field.

IV. Laboratory Learning Outcome (LLO):

- LLO 3.1 Calculate area of irregular plot from given plan of plot.

V. Relevant Affective Domain related Outcome(s):

- Using Safe behaviors effectively.
- Maintain high standards of hygiene.
- Efficient application of tools, equipment's and machinery.
- Professional and ethical standards.

VI. Relevant Theoretical Background:

A planimeter is an instrument which measures the area of plan of any shape very accurately. Before introducing digital planimeter there are two types of planimeter first Amsler Polar and second Roller planimeter. The mathematical calculation were needed to perform with polar and amsler planimeter to determine area but in digital planimeter no need to perform mathematical calculation as the area is directly get calculated by planimeter itself.

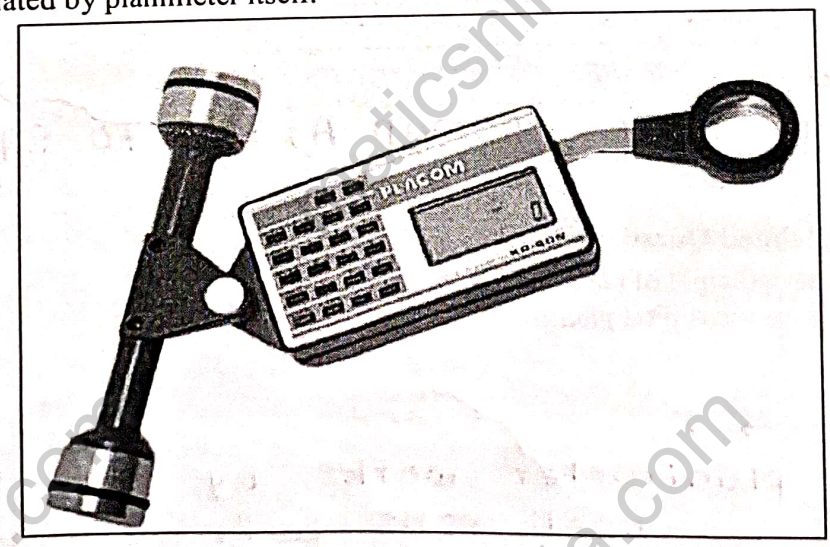

Figure 3.1 Digital Planimeter.

VII. Required Resources:

Sr. No.	Resource required	Particulars	Quantity
01	Digital planimeter.	As per IS standards.	1 nos.
02	Map or Figure with irregular Shape.	As per requirement	1 nos

VIII. Precautions to be followed:

1. Read the operating manual of instrument before use.
2. Tracing point is moved precisely over the boundary of figure or plan.
3. Set the scale as per the given drawing to the planimeter.

IX. Procedure:

1. First collect the digital planimeter and map from the lab.
2. Fix the map or drawing firmly on table.
3. Understand the use every keys provided on control panel of planimeter.
4. Select the appropriate scale on digital planimeter as per requirement.
5. Mark the starting point of plan.
6. Press the start button and start tracing operation of plan.
7. Press hold and memory key after completion of tracing operation to display the lengths nad area of traced plan with their prior set units.
8. Repeat the same procedure twice and average of the reading will give the accurate area of plan.
9. Switch the instrument of off and return it to lab.

X Results:

- Average area of the plan/topo sheet etc. = 2070 Sq. unit

XI. Interpretation of results:

Average area of given map befind out

XII. Conclusions:

Average area of map A1 = 2070 sq unit

XIII. Practical Related Questions:

1. What is the principle of planimeter?
2. How accurate the digital planimeter?

Space for Answer

Q. 1 ⟶ ?

Ans:- A planimeter works by measuring the distance a wheel rolls as its dragged around the perameter of a shape the area of the shape is properation to the distance the wheel rolls.

Q. 2 ⟶ ?

Ans:- Digital planimeter are typically accurate to within 0.2% of the whole scale How ever acuracy of the results depends on the acuraay of the map and your tracing skills.