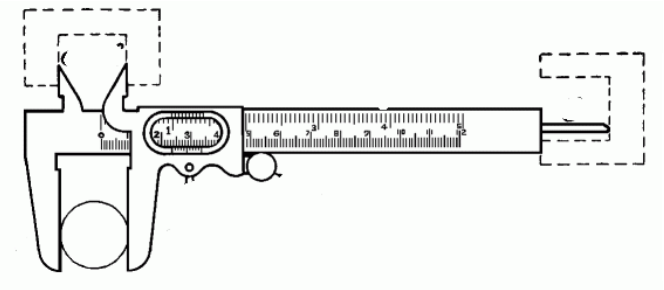
Experiment No: Date:

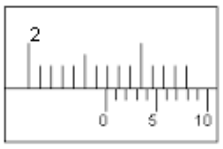
Vernier Calipers

Aim: 1. To find the volume of a Rectangular Block
2. To find the internal volume of a Calorimeter
3. To find mass of water that can be taken in the Calorimeter

Apparatus: Vernier Calipers, Rectangular block, Calorimeter etc



MSR =1.0 cm, VSR=2 div



MSR=2.6 cm, VSR=7 div

Theory:

Volume of the Rectangular Block = **Length** x **Breadth** x **Thickness** of the rectangular block

Inner Volume of the Calorimeter = $\pi r^2 D$

Where r is the inner volume and D is the depth of the Calorimeter given.

All the dimensions are measured using the Vernier Calipers.

Mass of water that can be taken in the calorimeter = Inner Volume of the Calorimeter x Density of Water

Density of Water = **1000 kg/m^3**

Total Reading = **MSR** + (**VSR** x **LC**)

Where **MSR** is the Main Scale Reading, **VSR** is the Vernier Scale Reading and **LC** is the Least Count of the Vernier Calipers.

$$LC = \frac{1}{n} x \, Value\ of\ a\ Main\ Scale\ Division$$

Where **n** is the total number of divisions of the vernier scale

Observations:

Zero Error = Nil

Value of a main Scale division = mm

1msd = cm

Total number of divisions of the Vernier n = div

$LC = \frac{1}{n} x\, 1msd$ = cm

Dimension	**Sl. No**	**MSR cm**	**VSR div**	**MSR + (VSR x LC) cm**	**Mean cm**
Length of the Rectangular Block	1 2 3 4 5 6				L =

Dimension	**Sl. No**	**MSR cm**	**VSR div**	**MSR + (VSR x LC) cm**	**Mean cm**
Breadth of the Rectangular Block	1 2 3 4 5 6				B =
Thickness of the Rectangular Block	1 2 3 4 5 6				T =
Dimension	**Sl. No**	**MSR cm**	**VSR div**	**MSR + (VSR x LC) cm**	**Mean cm**
Inner diameter of the Calorimeter	1 2 3 4 5 6				d =
Depth of the Calorimeter	1 2 3 4 5 6				D =

Calculations:

Volume of the Rectangular Block = **L x B x T** = cm^3

= m^3

Inner diameter of the Calorimeter d =

Inner radius of the Calorimeter r = d/2 =

Inner Volume of the Calorimeter $\pi r^2 D$ = cm^3

= m^3

Mass of water that can be taken in the calorimeter = Inner Volume of the Calorimeter x Density of Water

= kg = kg

Results:

1. Volume of the given Rectangular block = m^3
2. Inner Volume of the given Calorimeter = m^3
3. Mass of water that can be taken in the Calorimeter = kg