



EXPERIMENT: 1

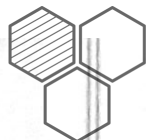
* Aim: To determine the density of glass slab by using Vernier callipers.

* Apparatus: Vernier callipers, glass slab

* Theory:
* Least count of Vernier callipers = 0.01 cm
* Measured distance = Main scale reading (x) + (vernier scale Reading (y) × Least count)
* Mass of glass slab: 200g

* Table for Length of a glass slab:-

S.N.	Main scale vernier		(L.C)	Mean (l)
	reading(cm) x	scale y		
1.	8	0	8.0	
2.	8	0	8.0	
3.	8	0	8.0	$\Rightarrow \frac{32.0}{4}$
4.	8	0	8.0	$\Rightarrow 8.0 \text{ cm}$



* Table for breadth of glass slab →

S.N	M.S.R (x)	V.S.R (y)	$L = x + y \times (L.C)$	Mean (b)
1.	5.4	5	$5.4 + 5 \times 0.01 = 5.45$	$\frac{5.45 + 5.53 + 5.54 + 5.52}{4}$ ⇒ 5.51 cm
2.	5.5	3	$5.5 + 3 \times 0.01 = 5.53$	
3.	5.5	4	$5.5 + 4 \times 0.01 = 5.54 \text{ cm}$	
4.	5.5	2	$5.5 + 2 \times 0.01 = 5.52 \text{ cm}$	

* Table for height of glass slab →

S.N	M.S.R (x)	V.S.R (y)	$L = x + y \times (L.C)$	Mean (h)
1.	1.8	9	$1.8 + 9 \times 0.01 = 1.89 \text{ cm}$	$\frac{1.89 + 1.89 + 1.86 + 1.87}{4}$ ⇒ 1.87 cm
2.	1.8	9	$1.8 + 9 \times 0.01 = 1.89 \text{ cm}$	
3.	1.8	6	$1.8 + 6 \times 0.01 = 1.86 \text{ cm}$	
4.	1.8	7	$1.8 + 7 \times 0.01 = 1.87 \text{ cm}$	

* Calculation:

$$\begin{aligned}
 1. \quad \text{Volume} &= \text{Length} \times \text{breadth} \times \text{height} \\
 &= 8.0 \times 5.51 \times 1.87 \\
 &= 82.4296 \text{ cm}^3
 \end{aligned}$$

$$\begin{aligned}
 2. \quad \text{Density} &= \frac{\text{mass}}{\text{Volume}} \\
 &= \frac{200}{82.4296} = 2.4263 \text{ g/cm}^3 \text{ Ans}
 \end{aligned}$$



* Precautions →

- Press the jaws gently.
- Before starting the experiment, the working of vernier callipers should be carefully examined.
- The vernier constant and zero error should be carefully calculated and recorded.