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) x least count)
  * Mass of glass slab : 200g

* **Table for Length of a glass slab** :-

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

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* Table for breadth of glass slab →

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

* Table for height of glass slab →

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

* Calculation :

1. Volume = Length x breadth x height
= 8.0 x 5.51 x 1.87
= 82.4296 cm^3

2. Density = $\frac{\text{mass}}{\text{volume}}$
= $\frac{200}{82.4296}$ = 2.4263 g/cm^3 Ans

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* 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.

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