Class IX

EXPERIMENT No: 2

AIM: To determine the density of the solid (denser than water) by using a spring balance and a measuring cylinder.

APPARATUS/ MATERIALS REQUIRED: A measuring cylinder (preferably 200 mL with a least count of 1mL), a spring balance, a small non porous object

fig (a)

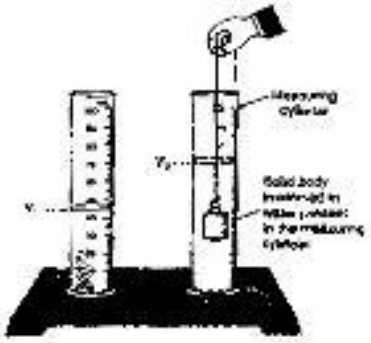
fig (b)

PROCEDURE:

(A) To find mass m (fig a)

1. Find the least count of the spring balance.
2. Hold the spring balance vertically and check whether the pointer of the scale reads exactly zero. If not adjust the scale.
3. Suspend the spring balance from the iron stand.
4. Suspend the given body from the hook of the spring balance and note the reading.
5. Repeat the procedure to take two more observation for mass.

(B) To find the volume (V) of the body. (fig b)

1. Take the measuring cylinder of suitable volume.
2. Determine the least count of the cylinder.
3. Fill the cylinder with water upto certain suitable level.
4. Note the initial level of water in the cylinder by reading the lower meniscus.
5. Record this reading as V1.
6. Immerse the body fully in water in the cylinder.
7. The water level will rise, record this reading as V2.
8. Find $V_2 - V_1$. This gives the volume V of the body.
9. Repeat the procedure to obtain two more observation.

OBSERVATION:

(A) Mass of the body:

S. No.	Mass of the body (g)
1	
2	
3	

Mean mass (m) = (m_1 + m_2 + m_3) / 3 = …….. g

(B) Volume of the body:

S. No.	Before immersing the body, V_1 (mL)	After immersing the body V_2 (mL)	$V=V_2 - V_1$ (mL)
1			
2			
3			

Inference :

Mean value of the mass of the body, m= ……. g

Mean value of the volume of the body, V=…….. mL

Therefore DENSITY = m/ V = …….. g /mL

Density of the given body = …… g / cc or ……. Kg / m^3

NOTE: In case you want to determine the density of a large solid which cannot be immersed in the cylinder, you can use overflow can.

PRECAUTION:

1. The scale of the spring balance should be adjusted to read zero initially.
2. Take the reading only when the body comes to rest.
3. Only the lower meniscus of the water level should be read.