-12-2012

EXPERIMENT - 1

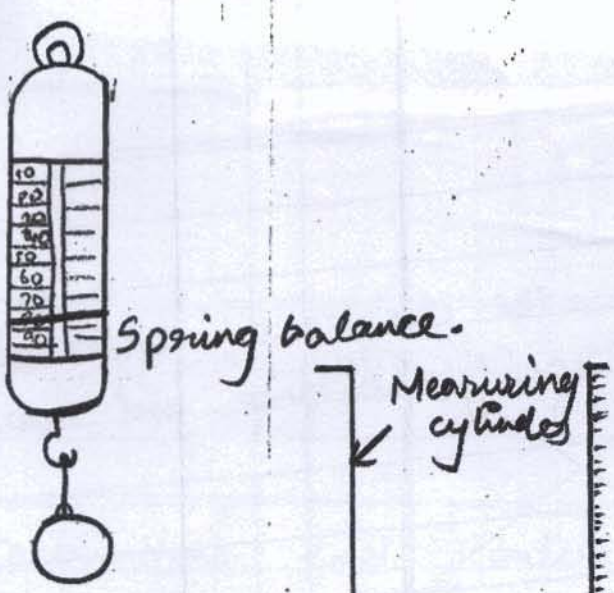
Aim: To determine the density of solid (denser than water), by using spring balance and measuring cylinder.

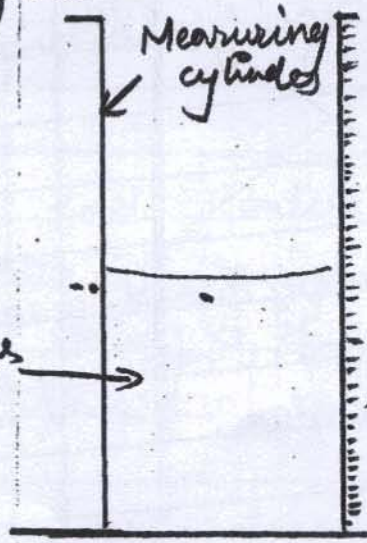
APPARATUS REQUIRED:

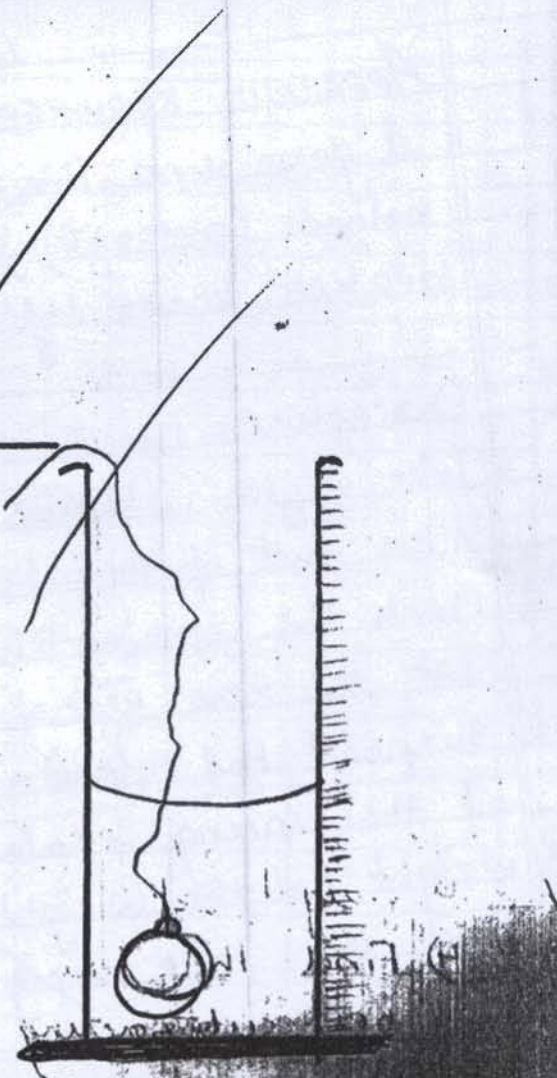
A glass stopper, fine cotton thread, a sensitive spring balance (0-100gf), 100 cc measuring cylinder and a beaker containing water.

Procedure:

1) Take a glass stoppers and tie it to a fine thread. On the other end of the cotton thread make a loop.
2) Check the spring balance zero error and record it. Let the zero error be x gf.
3) Surpend the glass stop metallic sphere from the hook of the spring balance. Measure and record its weight. Let the weight be Wgf or mass Wgf.
4) Find the true weight of the glass metallic sphere by subtracting the zero error from observed weight
5) Now pour about 40 cc of water in measuring cylinder. Measure and record the initial volume of the water let it be Pcc.


Spring balance.


Measuring cylinder
Water



6) Remove the metallic sphere from the hook of the spring balance. Slip the glass stopper gently in the measuring ~~balance~~ cylinder quite by containing water. The level of water rises up in the cylinder. Note down the final volume of water. Let the final volume be Qcc.

7) Calculate the volume of the metallic sphere. It is equal to the increased volume of water in the measuring cylinder, i.e. Q-P.

8) Calculate the density of the sphere by this formula:

Density of glass stopper = $\frac{\text{mass of glass stopper}}{\text{Volume of glass stopper}}$

PRECAUTIONS.

1) Use a sensitive spring balance.
2) Record the zero error in spring balance.
3) Record the water level in measuring cylinder by staying low.
4) Check that no air bubbles are sticking to the sphere when immersed in it water.

SOURCES OF ERROR

1) There can be error in measuring the weight by the spring balance.

2) There even can be errors in measuring the exates level in cylinder too.

Observations and calculations

Zero error in spring balance = ~~3g~~ 1

Obsereaed weigh to of sphere = ~~78g~~ 66 g.

correct weight of sphere = Observed weigh - zero er

= ~~78 - 3~~ = 79g 66 − 1 = 65 g

initial volume of water V^1 = ~~184 ml~~ 124 ml

final volume of water V^2 = ~~194 ml~~ 184 ml

volume of sphes = final volume − Initial volume

= ~~194 − 184~~ $\frac{184 - 124}{}$ = 10 ml

density = $\frac{75}{10}$ = $\frac{65}{10}$

= 7.5 g/cc 6.5 g/cm³

Result

The density of glass stopper is ~~7.5 g/cm³~~ 6.58 g/cm³

Experiment -2

Aim: To establish the loss relation between the loss in weight of solid when full immersed in water with weight of water displaced by it, by taking at least two different solids.

APPARATUS REQUIRED.

A spring balance (1-100 gf), a metalic sphere, a cylinder, thin cotton thread, an over flow jar, a beaker containing strong salty water, a pre weighted beaker.

Procedure.

1) Take a clean metallic sphere and tie it with a fine thread. Make a loop on the other end of the thread.
2) Check the spring balance for zero error and record it. Let the zero error be x gf
Surpend the metalic sphere from the spring balance. Read and record its weight in air. Let the weight be w gf. Calculate the true weight of sphere in air, by subtracting the zero error x from it observed weight.
Place the overflow jar on the wooden block and slowly pour water into it, till the water just starts overflowing. Place the clean and dry preweighted beaker under the spout of the over flow jar.

7) Now gently lowers the sphere into the ovres flow jars and completely immerse it. The wates will ovres flow in pre weighed beaker and reading in spring balance will be reduced.
8) Record the weight of sphere when fully immersed and also record weight the preweighed beaker with ovresflowed wates.
9) Calculate the loss of weight in metallic sphere after immering it.
10) calculate the weight of wates displaced by subracting the weight of beaker.

Conclusion:

W. It is clear that the weight of water displaced by the glass stopper is equal to the apparent loss of weight.

Precautions:

1) Use a sensitive spring balance.
2) Read and record the zero in the spring balance.
3) The water/salty wates in the ovres flow jar should at the verge of overflowing.

Observations and calculations.

Zero error in spring balance = 2 gf.

In air observed weight = 40 gf

∴ corrected weight of sphere in air = 40 − 2 = 38 gf.

Weight of Pre weighed beakes = 30 gf.

Observed weight of sphere in wates = 27 gf

Corrected weight of sphere in wates = 27 − 2 = 25 gf.

weight of pre weighed beakes + displaced wates = 43 gf

∴ Apparent loss of weight of sphere in wates = 38 − 25 = (44 − 26) gf = 18 gf.

∴ weight of wates displaced by the sphes = 43 − 30 = 13 gf

∴ The weight of water displaced by the sphere is equal to the apparent loss of weight in wates.

2.12.12

EXPERIMENT - 3

Aim: To verify laws of reflection of sound.

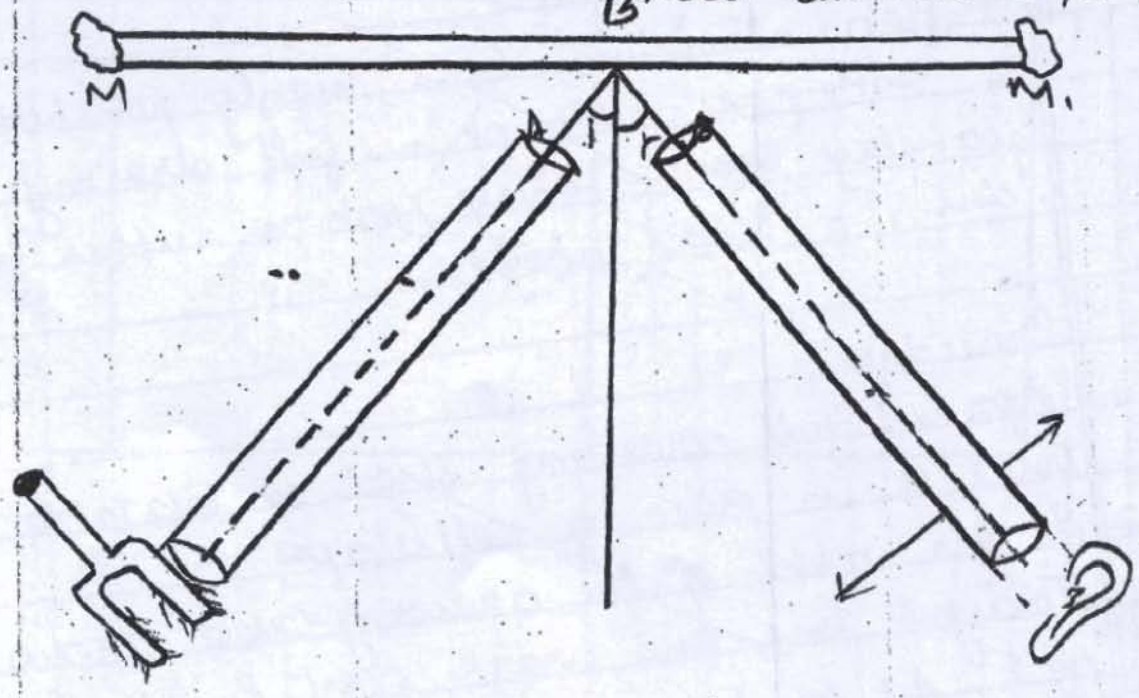
APPARATUS REQUIRED

Two aluminium tubes, highly polished from inside, 2 tooth picks; cellotape or full drawing sheet. geometry box. a tuning fork, a rubber cork, plasticine, a metal plate.

Procedure:

1. Spread full drawing sheet on lab table and hold it in place of cellotape.
2. In the middle of the drawing table draw a straight line and mark point B on it as shown in fig 1. At point B draw a ⊥.
3. Place the metal plate along the line MM1 in vertical position and hold it in place either with pursains or pieces of cork behind.
4. Take each of the metallic tubes and on their inner ends fix a tooth pick with the help of cello tape.
5. Place on metallic tube on the left hand side on the cri of tooth pick.
6. Place another metallic tube on the right side

A flat aluminium plate B held in vertical plane.



similar to left side

7) Ask a class mate to strike a tunning fork at one end.
8) Put your ear close to the tube on the right hand side. Adjust till you hear it properly.
9) Mark lines with help of a pencil along the tooth picks. Remove the tubes. Extend the lines and shown in figure.
10) Measure the angle of incidence on the left hand side of the normal and right hand side.
11) Repeat the experiment two 3 time with different angles.

RESULT:

1) Within experimental limits the angle of incidence is equal to angle of reflection.

PRECAUTIONS

1) The metalic tube should be highly polished from within.
2) The vibrating tunning fork should not touch the tube and must be near.
3) The metal plate should be highly polished.

OBSERVATIONS :-

S.NO	Angle of- Incidence	Angle of reflection
1.	33°	32°
2.	39°	38°
3.	41°	42°
4.	46°	45°
5.	54°	55°