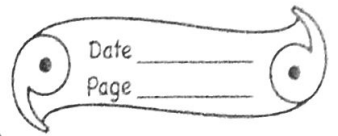


Home Assignment



Physical quantities and Measurement.

1) Define the term density of the substance?

Sol: Density of a substance is defined as 'Mass per Unit volume'

$$d = \frac{M}{V}$$

2) Name SI unit of density. How is it relate to $g\text{cm}^{-3}$?

Ans: - SI unit of density is kg m^{-3} In C.G.S. system unit of mass is g and unit of volume is cm^3 ; so C.G.S. unit of density is $g\text{cm}^{-3}$

Relationship between SI and C.G.S. unit

$$1\text{kg m}^{-3} = \frac{1\text{kg}}{1000} = \frac{1000\text{g}}{(100)\text{cm}^3} = 10\text{g cm}^{-3}$$

$$\text{Thus, } 1\text{g cm}^{-3} = 1000\text{kg m}^{-3}$$

3) The density of brass is 8.4g cm^{-3} what do you mean by this statement?

Ans: - This statement means one cubic centimetre volume of brass has mass of 8.4g .

4) Arrange following substance in order

fore their increase density :-

Iron, cork, Brass, water and mercury?

Ans. Cork, water, Iron, Brass, mercury.

5) How does the density of liquid vary with temperature?

Ans. Most of liquid increase in volume with temperature but water shows anomalous behaviour. Water has maximum volume at 4°C and maximum density at 4°C . Actually when volume increase, density decrease, and when volume decrease density increase. But water when cooled from high temperature, contract upto 4°C because volume decrease and expand when cooled further below 4°C and hence density of water increase when it cooled upto 4°C while decrease when cooled further below 4°C .

6) A given quantity of liquid is heated. Which of the following quantity will vary and how?
a) mass b) volume c) density.

Ans. When a given quantity of liquid is heated
a) mass - Does not change.
b) volume - change and increase with rise in temperature

c) Density = Change and decrease, $d = M/V$

7) Describe an experiment to determine density of material of coin.

Ans:- $D = M/V$. To find density of material of coin

i) Find mass by common beam balance

ii) Volume by measuring cylinder

Measure mass of coin.

Let mass of coin by beam balance = M
 $\Rightarrow 50g$

Measure vol. of coin

Initial volume of water = $V_1 = 40 \text{ ml}$

Final volume of water, when coin

is added in cylinder = $V_2 = 50 \text{ ml}$

Vol. of coin = $V_2 - V_1 = 50 - 40 = 10 \text{ ml}$

$D = \frac{M}{V} = \frac{50}{52-42} = \frac{50}{10} = 5 \text{ gcm}^{-3}$

8) Describe an experiment to determine density of liquid.

Ans, I like find:- Vol. of liquid dry milk ii) mass of liquid.

i) Mass of milk = .

wt. of empty 100 c.c. beaker = $M_1 g = 70g$

fill beaker half with milk and weigh again

$\Rightarrow M_2 g = 116g$

ii) To find vol. of milk

Transfer of milk into cylinder and note $V = 40$

$$D = \frac{m}{V} = \frac{(M_2 - M_1)}{40 \text{ c.c}}$$

$$\Rightarrow \frac{(116 - 70)}{40} = \frac{46}{40} = \frac{406}{4} = 1.15 \text{ g cm}^{-3}$$

9. What is density bottle, how it use to density of liquid?

Ans) Density bottle: A small glass bottle have glass stopper at its neck. The ~~but~~ bottle can store a fix volume of liquid. Generally volume of bottle is 25 ml or 50 ml. ~~The~~ stopper has narrow hole through it. When bottle is filled with liquid and stopper is inserted, Excess liquid through hole and drain out. Thus the bottle will contain same volume of liquid ~~at~~ each time when it is filled. It is used to determine density of liquid.