

ch-1

Physical quantities and measurement
Home Assignment

1) Define the term density of a substance?

Ans) The mass or the mass of a substance is called density of substance.

2) State the SI and the CGS unit of it, how they are related.

Ans) The SI unit of mass is kilogram and volume is cubic meter. The SI unit of density is kg/m^3 . The CGS unit of mass is gram and of volume cubic centimeter. The CGS unit of density is g/cm^3 .

Relationship between kg/m^3 and g/cm^3

$$= 1 \text{ kg} = 1000 \text{ g} \quad \text{or} \quad 1 \text{ g} = \frac{1}{1000} \text{ kg}$$

$$= 1 \text{ m}^3 = (100 \text{ cm})^3$$

$$= 100 \times 100 \times 100 = 10,00,000 \text{ cm}^3$$

3) How does the density of water change when heated from 0 to 4 degree celcius?

Ans) When water is heated from 0°C, its volume decreases because its density increases and you can see this effect upto 4°C. Because.

The density of ice is maximum at 4°C .
Afterwards as the density decreases the volume increases.

4) How density will change with temperature?

Ans) Density changes with temperature because volume changes with temperature. Density is mass divided by volume. As you heat something up, the volume usually increases because the faster moving molecules are further apart. Since, volume is in the denominator, increasing the volume decreases the density.

5) The mass of 5l water is 5kg. Find the water in gram per centimeters cube?

Ans) Mass $M = 5\text{kg} = 5000\text{g}$

Volume $V = 5\text{l} = 5000\text{ml} = 5000\text{cm}^3$

$$\text{density} = \frac{5000\text{g}}{5000\text{cm}^3} = 1\text{g/cm}^3$$

$$= 1\text{gcm}^{-3}$$