

Daily flow - 23/07/21

1. Given,

→ $m_1 = 35\text{g}$ (Empty bottle)

→ $M_2 = 65\text{g}$ (Bottle + Water)

→ $M_3 = 59\text{g}$ (Bottle + Alcohol).

$$\begin{aligned} \rightarrow \text{RD of Alcohol} &= \frac{(M_3 - M_1)}{(M_2 - M_1)} = \frac{59\text{g} - 35\text{g}}{65\text{g} - 35\text{g}} \\ &= \frac{24}{30} = \frac{4}{5} = 0.8 \end{aligned}$$

∴ Relative Density of Alcohol is 0.8.

2. Density bottle is a glass bottle which is used to find the volume of liquid and ultimately by dividing Mass of the liquid by the Volume, we get the Density. The density bottle has a fixed volume, thus, we pour any liquid in it, the $V_L = V_B$ as the Extra liquid will be removed out by its stopper and we can get a volume for it.

3. Density

→ It's the amount of mass present in a certain volume of it.

→ It has unit.

Relative Density

It's the ratio of the density of the liquid by D. of water.

It has No unit.

4. Relative Density of Aluminium is 2.7

→ It means that the Density of Aluminium in context to, or compared with the density of Water, is $\frac{2}{7}$ or 2.7

→ Mathematically It's the ratio of the density of Aluminium and the density of Water.

5. a) V. of D. Bottle = mass of water present in it
= (M of D. Bottle + M of W) - (M of D. Bottle)
= 41.8g - 21.8g
= 20g.

b) R.D of liquid = $\frac{M_3 - M_1}{M_2 - M_1} = \frac{40g - 21.8g}{41.8g - 21.8g}$
 $= \frac{18.8g}{20.0g} = \frac{9.4}{10}$
 $= 0.94$

6. Density of Bromine liquid = $\frac{M}{V} = \frac{54g - 22g}{50g - 22g \text{ cm}^3}$
 $= \frac{32g}{28 \text{ cm}^3}$

R.D of Bromine liquid = $\frac{M_3 - M_1}{M_2 - M_1} = \frac{54 - 22g}{50 - 22g} = \frac{32g}{28g} = \frac{8}{7}$