C. Numericals

① The density of air is 1.28 g litre^{-1}. Express it in

a) g cm^{-3}

Sol: Density of air = 1.28 g/l

In g cm^{-3} = $\frac{1.28}{1000}$ = 0.00128 g cm^{-3}

b) kg m^{-3}

= 0.00128 × 100 = 1.28 kg/m^3.

② The dimensions of a hall are 10 × 7 × 5 m. If density of air is 1.11 kg m^{-3}. Find mass of air in the hall

Sol: Dimensions of hall = 10 × 7 × 5 m
Volume of hall = 350 m^3
Density of air = 1.11 kg m^{-3}

M = V × D
= 350 × 1.11
= 388.5 kg

③ The density of aluminium is $2.7\ g\ cm^{-3}$. Express it in $kg\ m^{-3}$.

sol: density of Al = $2.7\ g/cm^3$

In $kg/m^3 = \frac{27 \times 1000}{10} = 2700\ kg\ m^{-3}$

④ The density of alcohol is 600 kg/m^3. Express it in $g\ cm^{-3}$.

sol: Density of alcohol = $600\ kg/m^3$

In $g/cm^3 = \frac{600}{1000} = 0.60\ g/cm^3$

⑤ A piece of zinc of mass 438.6 g has a volm of 86 cm^3. Calculate the density of zinc.

sol: Mass of zinc (M) = 438.6 g

$V = 86\ cm^3$

$D = \frac{m}{V} = \frac{438.6}{86} = 5.1\ g/cm^3$

⑥ A piece of wood of mass 150 g has a volm of 900 cm^3. Find density of wood in CGS unit & SI unit.

sol: Mass of wood = 150g

Volm of wood = $900\ cm^3$

Density = $\frac{m}{V} = \frac{150}{900} = 0.75\ g/cm^3$

In SI system = $0.75 \times 1000 = 750\ kg/m^3$