

TENDER HEART HIGH SCHOOL, SEC-33B, CHD.
CLASS- IX
CHAPTER- 5

SUBJECT- CHEMISTRY
TEACHER- ANAMIKA

Q:-1 Calculate:-

a) the gram molecular mass of Chlorine if 308cm^3 of it at STP weighs 0.979g .

b) the vol. of 4g of H_2 at 4 atmosphere

c) the mass of Oxygen in 2.2L of CO_2 at STP.

Ans:-

$$\text{No. of moles} = \frac{\text{Given vol.}}{22.4\text{L or } 22400\text{cm}^3}$$

$$\frac{308}{22400} = 0.0137 \text{ moles}$$

$$\text{No. of moles} = \frac{\text{Given weight}}{\text{molecular weight}}$$

$$0.0137 = \frac{0.979}{x}$$

$$x = 71\text{g}$$

b) 2g (molar mass) H_2 at 1atm has volume = 22.4L
So 4g H_2 at 1atm will have Vol. = 44.8L

Now, at 1atm (P_1) 4g H_2 has Vol. (V_1) = 44.8L

So, at 4atm (P_2) the Vol. (V_2) will be

$$P_1 V_1 = P_2 V_2$$

$$\frac{P_1 V_1}{P_2} = \frac{1 \times 44.8}{4}$$

$$= 11.2 \text{ dm}^3$$

c) mass of oxygen in $22.4 \text{ L} = 32 \text{ g}$ (molar mass)

$$\therefore \text{mass of oxygen in } 2.2 \text{ L} = \frac{32 \times 2.2}{22.4}$$

$$= 3.14 \text{ g}$$

Q:- If phosphorus is considered to contain P_4 molecules, then calculate number of moles in 100 g of phosphorus?

Ans:- Molecular mass of $P_4 = 31 \times 4 = 124 \text{ g}$

$$124 \text{ g} = 1 \text{ mole}$$

$$\therefore 100 \text{ g} = \frac{100}{124} = 0.806 \text{ moles}$$

$$\text{No. of atoms in } 0.806 \text{ moles} =$$

$$4 \times 0.806$$

$$= 3224 \text{ atoms}$$