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TENDER HEART HIGH SCHOOL, SEC-33B

CHD

Class-X Chapter- 5

Subject- Chemistry Teacher - Anamika

Revision

Q:-1 Calculate the vol. of HCl gas formed and chlorine gas required when 40 ml of methane reacts completely with chlorine at S.T.P.

$CH_4 + 2Cl_2 \longrightarrow CH_2Cl_2 + 2HCl$

Soln:-

$CH_4 + 2Cl_2 \longrightarrow CH_2Cl_2 + 2HCl$

(1 vol.) (2 vol.) (1 vol.) (2 vol.)

Acc. to above eqn

1 vol. of CH_4 produces 2 vol. of HCl

∴ 40 vol. of CH_4 produces HCl at S.T.P. 2×40

$= 80$ ml

Hence, vol. of HCl produced at STP = 80ml

Q:-2 Calculate mass of 2.8 l of CO_2 at STP?

Soln:- 1 mole of $CO_2 = 44g$

Also 1 mole of CO_2 = 22.4 l at STP

$\therefore$ 22.4 l of CO_2 at STP = 44g

$\therefore$ 2.8L of CO_2 at STP = $\frac{44}{22.4} \times 2.8$

$= 5.5g$

Mass of $CO_2 = 5.5g$

Q:-3 Calculate no. of atoms present in 117g of k.

Soln:- No. of moles in 117g of k = $\frac{\text{Mass}}{\text{Atomic Mass of k}}$

$\frac{117}{39} = 3$

No. of atoms in 117g of k = $3 \times 6.022 \times 10^{23}$

$= 1.806 \times 1024$

Q:-4 Cal. no. of atoms in 10g of Chlorine with that of 10g of nitrogen

Soln:- No. of moles in 10g of $Cl_2 = \frac{10}{71}$

No. of atoms in 10g of $Cl_2 = \frac{10}{71} \times 6.022 \times 10^{23} \times 2$

$= 1.7 \times 10^{23}$ atoms

Similarly, no. of atoms in 10g of nitrogen

$$= \frac{10}{28} \times 6.022 \times 10^{23} \times 2$$

$$= 4.3 \times 10^{23} \text{ atoms}$$

Q:- Calculate the weight of
a) 10g atoms of Na
b) 10^{10} atoms of Na

soln:- a) 1g atom of Na has weight = 23g
10g atoms of Na has weight = $23 \times 10 = 230$g

b) weight of 1 atom $= \frac{23}{6.022 \times 10^{23}}$

weight of 10 atoms $= \frac{23}{6.022 \times 10^{23}} \times 10$

$$= 3.82 \times 10^{-22} \text{g}$$