

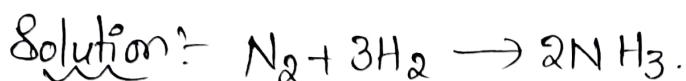
Class:- VIII

Weight - Volume and Volume - Volume
Relationship

Teaching Task

JEE Main Level Questions

Q1) Ans:- 3.



$$28 \quad 3 \times 2 \times 1 = 6$$

Given $\text{N}_2 = 2.8\text{g}$.

1 mole of $\text{N}_2 = 28\text{g}$.

$$\begin{array}{l} 1 \longrightarrow 28\text{g} \\ x \xrightarrow{\times} 2.8\text{g} \end{array}$$

$$x = \frac{2.8}{28} = 0.1 \text{ moles.}$$

For 1 mole N_2 requires 3 moles of H_2 .

$$\text{N}_2 = 0.1 \text{ then } \text{H}_2 = 0.3 \text{ moles.}$$

One mole of any gas at STP occupies 22.4 litres.

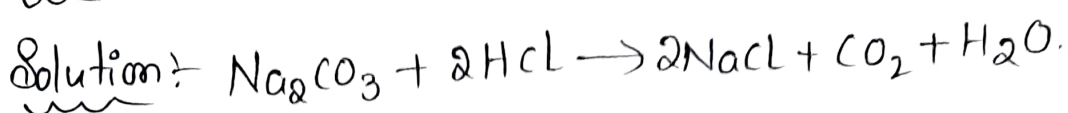
H₂

$$\begin{array}{l} 1 \longrightarrow 22.4 \text{ litres.} \\ 0.3 \xrightarrow{\times} x \end{array}$$

$$x = 22.4 \times 0.3$$

$$= 6.72 \text{ litres.}$$

Q2) Ans:- 2



For 1 mole of Na_2CO_3 , 1 mole CO_2 liberated.

Given Na_2CO_3 weight = 2.12 grams.

$$1 \text{ mole } \text{Na}_2\text{CO}_3 = 2(23) + 12 + 48 = 106 \text{ gms.}$$

$$1 \xrightarrow{\text{mole}} \text{Na}_2\text{CO}_3 = 106 \text{ gms.}$$

$$1 \rightarrow 106 \text{ g.}$$

$$x \xrightarrow{\times} 2.12 \text{ g}$$

$$x = \frac{2.12}{106} = 0.02 \text{ moles.}$$

$\text{Na}_2\text{CO}_3 = 1 \text{ mole}$ then $\text{CO}_2 = 1 \text{ mole}$

if Na_2CO_3 is 0.02 moles CO_2 is also 0.02 moles.

1 Mole of CO_2 occupies 22.4 litres.

$$1 \rightarrow 22.4 \text{ litres}$$

$$0.02 \xrightarrow{\times} x.$$

$$x = 22.4 \times 0.02$$

$$= 0.448.$$

Q3) Ans:- B.

Solution:- $S + O_2 \rightarrow SO_2$.

1 mole sulphur, 1 mole O_2 required.

Sulphur,

$$1 \text{ mole} = 32 \text{ gms.}$$

$$x \xrightarrow{\quad} 2 \text{ grams}$$

$$x = \frac{2}{32} = 0.0625 \text{ moles.}$$

For oxygen

$$1 \text{ mole} \rightarrow 22.4 \text{ litres.}$$

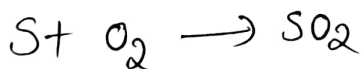
$$0.0625 \xrightarrow{\quad} x.$$

$$x = 1.4 \text{ litres.}$$

$$\text{Option B) } \frac{22.4 \times 1}{16} = 1.4 \text{ litres}$$

Q4) Ans:- 3.

Solution:-



1 mole of sulphur requires 1 mole of oxygen.

1.5 moles of sulphur requires 1.5 moles of O_2

O_2

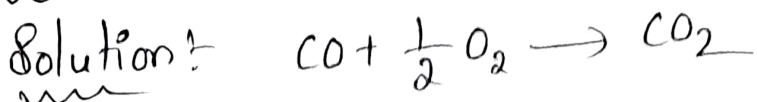
$$1 \rightarrow 22.4 \text{ litres}$$

$$1.5 \xrightarrow{\quad} x$$

$$x = 1.5 \times 22.4$$

$$= 33.6 \text{ litres}$$

Q5) Ans:- 2



For 1 mole CO it produces 1 mole of CO_2

CO_2

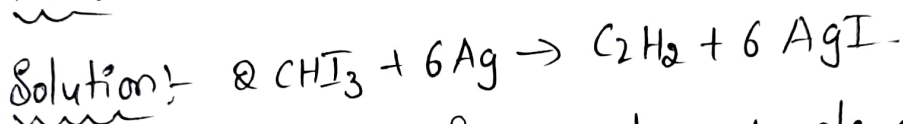
1 mole $\rightarrow$ 22.4 litres

$x \xrightarrow{\quad} 11.207 \text{ litres}$

$$x = \frac{11.2}{22.4} = 0.5 \text{ moles.}$$

CO also 0.5 moles, it occupies 11.2 litres.

Q6). Ans:- 2



2 moles of iodoform produces 1 mole of acetylene

CHI_3

C_2H_2

2 $\xrightarrow{\quad} 1$
 $0.01 \xrightarrow{\quad} x$

$$x = \frac{0.01}{2} = 0.005 \text{ moles.}$$

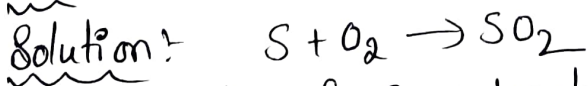
C_2H_2

1 mole $\rightarrow$ 22.4 litres.

0.005 $\xrightarrow{\quad} x$

$$x = 22.4 \times 0.005 = 0.112 \text{ L or } 112 \text{ mL}$$

Q7) Ans:- 3.

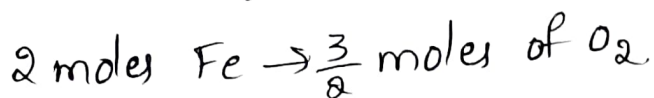
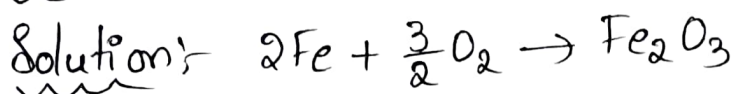


For 1 mole of S $\rightarrow$ 1 mole of O_2

For 1.5 moles of S $\rightarrow$ 1.5 moles of O_2

1.5 moles occupy 33.6 litres.

Q8) Ans: 3.

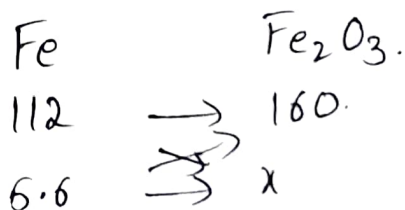


$$2\text{Fe} = 2 \times 56 = 112\text{gms} \quad \frac{3}{2}\text{O}_2 = \frac{3}{2} \times \frac{16}{2} = 48\text{gms.}$$

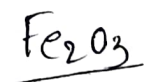
For $\frac{3}{2}\text{O}_2$ moles occupies $\frac{3}{2} \times 22.4\text{ litres} = 33.6\text{ litres.}$

They are giving 5.6 litres of O_2 , 5.6gms of Fe.
Iron is insufficient to react with O_2 , So
limiting reagent is Fe.

$$\text{Fe}_2\text{O}_3 = 2 \times 56 + 3 \times 16 = 112 + 48 = 160\text{gms.}$$



$$x = \frac{160 \times 5.6}{112} = 8\text{gms.}$$



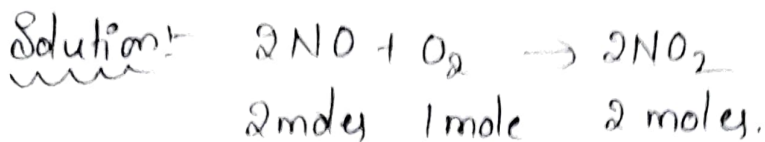
1 mole $\rightarrow 160\text{gms.}$

x $\rightarrow 8\text{gms}$

$$x = \frac{8}{160}$$

$$= 0.05\text{ moles}$$

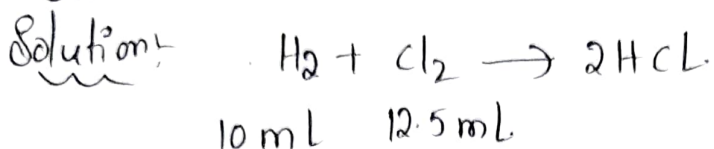
Q9) Ans:- 2



$V \propto n \rightarrow$ Avagadro law.

20 ml of NO produces 20 ml of NO_2

Q10) Ans:- 4.

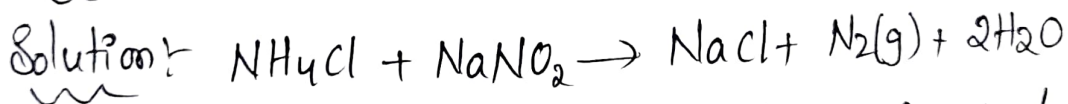


For 1 mole of $\text{H}_2 \rightarrow 2$ moles of HCl .

For 10 ml of $\text{H}_2 \rightarrow 20$ ml of HCl produced.

Advanced Level Questions

Q11) Ans:- B, C, D.



For 1 mole NH_4Cl , 1 mole NaNO_2 is required

But they give 0.5 moles of NaNO_2 & 1 mole of NH_4Cl .

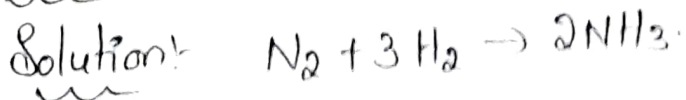
So, NaNO_2 is limiting reagent.

For 0.5 moles of NaNO_2 produces 0.5 moles of N_2

0.5 moles of $\text{N}_2 = \frac{22.4}{2} \text{ litre} = 11.2 \text{ litres}$.

and weight = 14 gms

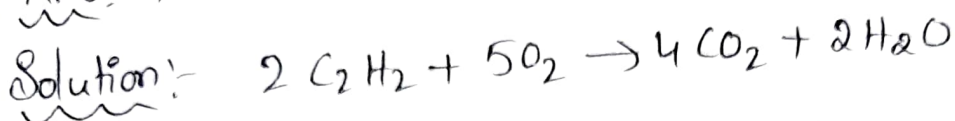
Q12) Ans:- A.



1 volume of N_2 combines with 3 volumes of H_2 to give 2 volumes of NH_3 .

The ratio of $N_2:H_2$ is 1:3, which is a simple ratio.

Q13) Ans:- A



2 moles of $C_2H_2 = 5$ moles of O_2 .

C_2H_2	O_2
$2 \times 22.4 \text{ lit}$	$5 \times 22.4 \text{ litres}$
$=$	$=$
44800 mL	$112,000 \text{ mL}$
70	$\searrow \nearrow$
	x

$$x = \frac{112,000 \times 70}{44800} = 175 \text{ mL}$$

For 70 mL of C_2H_2 , 175 mL of oxygen required

Q14) Ans:- $CuO + H_2 \rightarrow Cu + H_2O$.

Ans:- A

For 1 mole CuO , 1 mole H_2 produces 1 mole Cu .

$$1 \text{ mole } CuO = 65.5 + 16 = 81.5 \text{ gms.}$$

CuO

$$1 \text{ mole} \rightarrow 81.5 \text{ gms.}$$

$$x \rightarrow 7.95$$

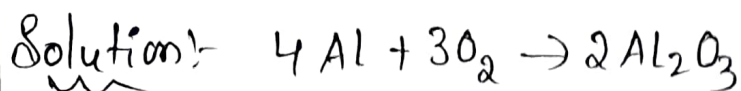
$$x = \frac{7.95}{81.5} = 0.097 \text{ mole.}$$

$$1 \text{ mole} \rightarrow 22.4 \text{ litres.}$$

$$0.097 \rightarrow x$$

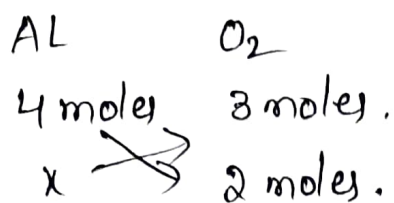
$$x = 2.185 \text{ litres}$$

15) Ans:- 4.



For 4 moles of Al requires 3 moles of O_2

But given 44.8 lit of O_2 means 2 moles.

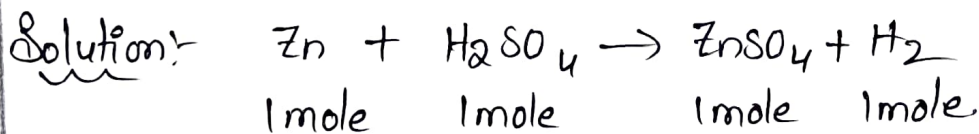


$$x = \frac{4 \times 2}{3} = \frac{8}{3} = 2.66 \text{ moles.}$$

1 mole of Al = 27 gms.

$$\text{For } 2.66 \text{ moles} = 2.66 \times 27 = 72 \text{ gms.}$$

Q16) Ans:- 2



Given $\text{H}_2 = 224 \text{ mL}$.

$$1 \text{ mole} \rightarrow 22400 \text{ mL.}$$

$$x \rightarrow \del{22400} 224 \text{ mL}$$

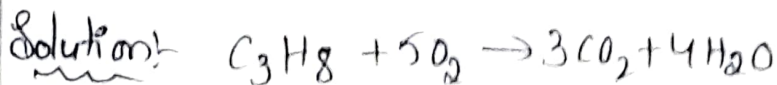
$$x = \frac{224}{22400} = 0.01 \text{ moles.}$$

For 0.01 moles of H_2 , Zn also 0.01 moles

1 mole Zn = 65 g.

$$\begin{aligned} 0.01 \text{ moles of Zn} &= 0.01 \times 65 \\ &= 0.65 \text{ gms.} \end{aligned}$$

Q17) Ans:- 2



For 1 mole of C_3H_8 requires 5 moles of O_2

$$1 \text{ mole } C_3H_8 = (3 \times 12) + 8(1) = 36 + 8 = 44 \text{ gms.}$$

Given $C_3H_8 = 2.2 \text{ gms.}$

$$1 \rightarrow 44 \text{ gms.}$$

$$x \rightarrow 2.2 \text{ gms}$$

$$x = \frac{2.2}{44} = 0.05 \text{ moles.}$$

$$\text{For } 0.055 \text{ moles of } C_3H_8 = 5 \times 0.055 \text{ of } O_2 \\ = 0.25 \text{ moles.}$$

For O_2

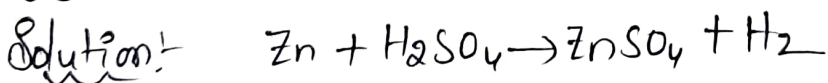
$$1 \text{ mole} \rightarrow 22.4 \text{ litres.}$$

$$0.275 \text{ moles} \rightarrow x$$

$$x = 22.4 \times 0.25 = 5.6 \text{ L.}$$

Integer Type.

Q18) Ans:- 2

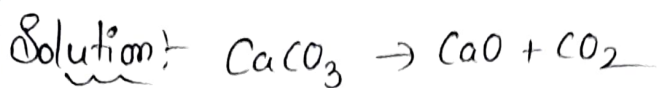


For 1 mole of Zn , 1 mole of H_2 produced.

Given 44.8 L of H_2 , i.e., 2 moles of H_2

For 2 moles of $H_2 \rightarrow 2 \text{ moles of } \underline{Zn}$

Q19) Ans:- 2



For 1 mole of CaCO_3 , produces 1 mole of CO_2

For 448ml of CaCO_3 , no. of moles of $\text{CO}_2 = ?$

CO_2

$$1 \rightarrow 22.4 \text{ litres.}$$

$$x \rightarrow 0.448 \text{ litres.}$$

$$x = \frac{0.448}{22.4} = 0.02 \text{ moles.}$$

For 0.02 moles of CO_2 , 0.02 moles of CaCO_3 .

$$1 \text{ mole of } \text{CaCO}_3 = 40 + 12 + 48 = 100 \text{ gms.}$$

$$0.02 \text{ moles of } \text{CaCO}_3 = ?$$

$$\begin{array}{l} 1 \rightarrow 100 \\ \searrow \nearrow \\ 0.02 \rightarrow x \end{array}$$

$$x = 0.02 \times 100 = 2 \text{ gms.}$$

This 2 gms of CaCO_3 produces 448ml of O_2 .

But they gave only 10 gms.

$$\text{Purity} = \frac{2}{10} \times 100 = 20\%$$

20% CaCO_3 is present.

$$20\% = 2 \times 10\%$$

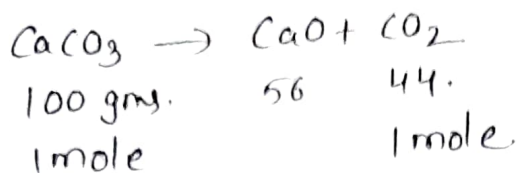
$$\underline{\underline{x = 2.}}$$

Matrix Matching

Q 20)

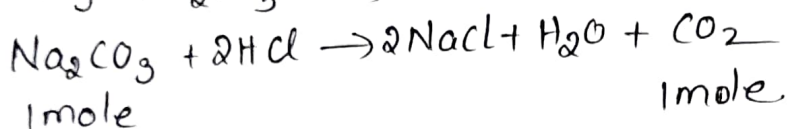
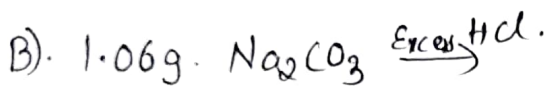
Ans:- A - (iv), B - (i), C - (ii), D - (iii)

Solution:-



10gms means = 0.1 mole.

0.1 mole of $CaCO_3 \rightarrow$ 0.1 moles of CO_2
 $\rightarrow 0.1 \times 22.4 \text{ litres} = 2.24 \text{ litres}$



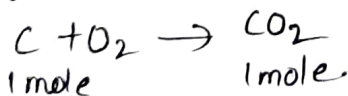
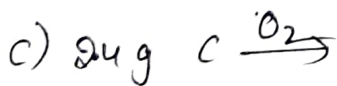
1 mole = $46 + 12 + 48 = 106 \text{ gms.}$ of Na_2CO_3 .

1.06 gms means $\rightarrow$ 0.01 moles.

For CO_2

1	$\rightarrow$ 22.4 litres
0.01 moles	$\rightarrow x$

$x = \underline{0.224 \text{ litres}}$



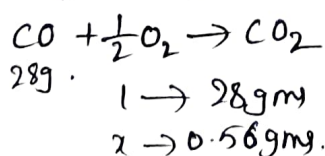
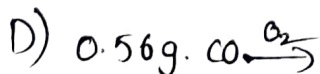
For C

1 mole = 12 gms	$x = \frac{2.4}{12} = 0.2 \text{ moles}$
$x = 2.4 \text{ gms}$	

$CO_2 \rightarrow$

1	$\rightarrow$ 22.4 litres
0.2	$\rightarrow x$

$\Rightarrow x = 22.4 \times 0.2 = 4.48 \text{ litres.}$



$x = \frac{0.56}{28}$
 $= 0.02 \text{ moles.}$

Volume of CO_2
 $= 22.4 \times 0.02$
 $= 0.448 \text{ litres}$

Learner's Task

Q1) Ans:- 4

Solution:- $2O_3 \rightarrow 3O_2$

$$O_3 = 3 \times 16 = 48 \text{ gms.}$$

Given $O_3 = 9.60 \text{ g.}$

For 1 mole $\rightarrow 48 \text{ gms}$
 $x \rightarrow 9.6 \text{ gms.}$

$$x = \frac{9.6}{48} = 0.2 \text{ moles.}$$

For $O_3 \quad O_2$
2 mole $\rightarrow$ 3 moles. $\rightarrow x = \frac{0.1}{0.2 \times 3} = 0.3 \text{ moles}$
 $0.2 \rightarrow x$

Volume of O_2

1 $\rightarrow$ mole = 22.4 litres.
 $0.3 \rightarrow x$

$$x = 0.3 \times 22.4 \text{ litres} = 6.72 \text{ litres} \\ = 6720 \text{ ml.}$$

Q2) Ans:- 2

Solution:- $S + O_2 \rightarrow SO_2$

SO_2 1 $\rightarrow$ 22.4 litres
 $x \rightarrow 0.224 \text{ litres.}$ $x = \frac{0.224}{22.4} = 0.01 \text{ moles.}$

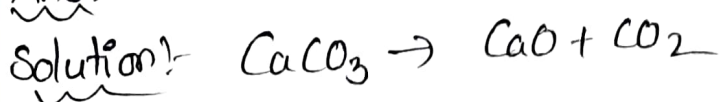
For 0.01 moles of SO_2 , 0.01 moles 'S' used.

1 mole of S = 32 gms.

0.01 moles of S = 32×0.01

$$= 0.32 \text{ gms}$$

Q3) Ans:- 3.



1 mole of $\text{CaCO}_3 = 1$ mole of CO_2

Given 5.6 litres of CO_2

$$1 \rightarrow 22.4 \text{ litres.}$$

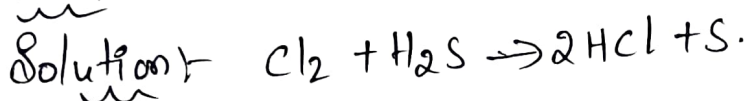
$$x \rightarrow 5.6$$

$$x = \frac{5.6}{22.4} = 0.25 \text{ moles.}$$

$$1 \text{ mole of } \text{CaCO}_3 = 40 + 12 + 48 = 100 \text{ gms.}$$

$$0.25 \text{ moles of } \text{CaCO}_3 = 100 \times 0.25 \\ = 25 \text{ gms}$$

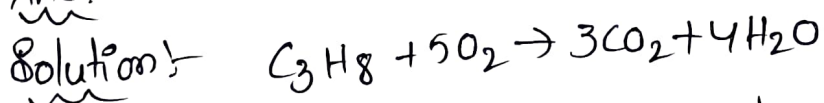
Q4) Ans:- 3.



1 mole of Cl_2 requires of 1 mole of H_2S .

Given $\text{H}_2\text{S} = 10$ litres, i.e., volume of $\text{Cl}_2 = 10$ litres

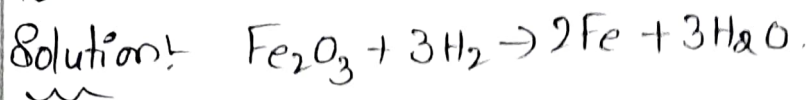
Q5) Ans:- 3.



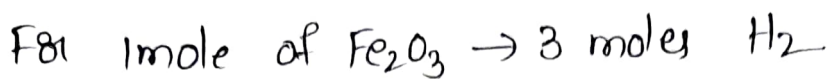
For 1 mole of $\text{C}_3\text{H}_8 \rightarrow 3$ moles of CO_2

$$\text{For } 100 \text{ cm}^3 \text{ of } \text{C}_3\text{H}_8 = 3 \times 100 \text{ cm}^3 \text{ of } \text{CO}_2 \\ = \underline{300 \text{ cm}^3}$$

Q6) Ans:- 1

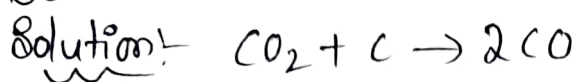


$$1 \text{ mole of } \text{Fe}_2\text{O}_3 = 2 \times 56 + 3(16) = 112 + 48 = 160 \text{ gms.}$$

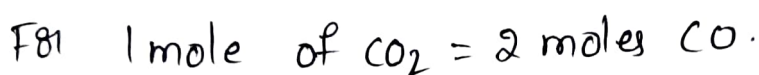


$$\text{Volume of 3 moles of } \text{H}_2 = 3 \times 22.4 \text{ litres}$$

Q7) Ans:- 4.

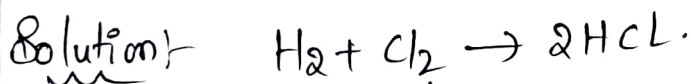


$$\text{Given Volume of } \text{CO}_2 = 26 \text{ CC.}$$



$$\begin{aligned} \text{Volume of } \text{CO} &= 2 \times 26 \\ &= 52 \text{ CC} \end{aligned}$$

Q8) Ans:- 1



$$\text{H}_2 = 100 \text{ mg} = 0.1 \text{ gms.}$$

$$\text{For 1 mole of } \text{H}_2 = 2 \text{ gm}$$

$$x \text{ of } \text{H}_2 = 0.1 \text{ gm}$$

$$x = 0.05 \text{ moles.}$$

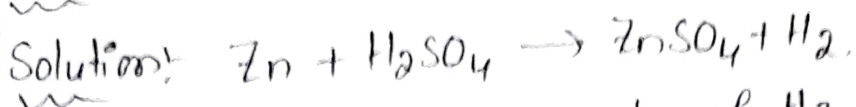


$$0.05 \text{ moles of } \text{H}_2 \text{ \& } 0.05 \text{ moles of } \text{Cl}_2, 0.1 \text{ moles of } \text{HCl}.$$

$$\text{Volume of 0.05 moles of } \text{Cl}_2 \rightarrow 0.05 \times 22400 \text{ mL}$$

$$= \underline{1120 \text{ mL}}$$

Q9) Ans: 1



1 mole Zn produce 1 mole of H_2

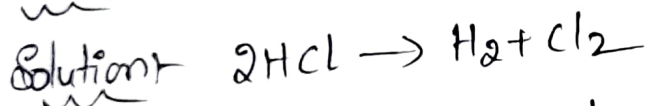
H_2 $1 \rightarrow 22.4 \text{ litres.}$
 $x \rightarrow 0.224 \text{ litres.}$

$$x = \frac{0.224}{22.4} = 0.01 \text{ moles.}$$

For 1 mole Zn = 65 gms.

$$0.01 \text{ moles of Zn} = 0.01 \times 65 = 0.65 \text{ gms.}$$

Q10) Ans: 4.



2 moles of HCl $\rightarrow$ 1 mole of H_2

Given Volume of HCl = 100 mL.

1 mole $\rightarrow 22400 \text{ mL.}$
 $x \rightarrow 100$

$$x = \frac{100}{22400} = 0.00446 \text{ moles.}$$

If HCl is 0.00446 moles, $\text{H}_2 = ?$

$$\text{H}_2 = 0.00223 \text{ moles.}$$

For 100 mL of HCl $\rightarrow$ 50 mL of H_2

III Main Level Questions

Q11) Age: 2

Solution: $\text{CO} + 0.5 \text{O}_2 \rightarrow \text{CO}_2$

For 1 mole CO , 0.5 moles of O_2 gives 1 mole CO_2

If $\text{CO} = 2 \text{ lit}$, $\text{O}_2 = 1 \text{ lit}$ then $\text{CO}_2 = 2 \text{ lit}$

Q12) Ans:- 4.

Solution: $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

For 2 moles of H_2 , 1 mole of oxygen.

For 26 ml of H_2 , requires 13 ml of O_2

But Given 24 ml of O_2

Remaining $O_2 = 24 - 13 = 11 \text{ ml}$.

Q13) Ans: 2

Solution:- $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
1mole 1mole

For 11.2 litres, $\text{CO}_2 = 0.5$ moles.

$$\text{CaCO}_3 = 40 + 12 + 48 = 100 \text{ gms.}$$

0.5 moles of $\text{CaCO}_3 = 50 \text{ gms.}$

50 gms of CaCO_3 is required produce 11.2 litres of CO_2 .

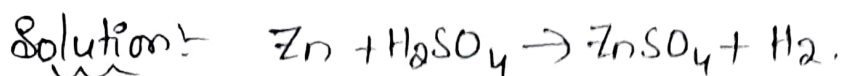
They told which is 80% pure

F81

80% $\rightarrow$ 50 gms
100% $\rightarrow$ x

$x = \frac{50 \times 100}{80} = 62.5 \text{ gms.}$

Q14) Ans:- 2



Given $\text{Zn} = 6.5 \text{ gms.}$

$\text{Zn} = 0.1 \text{ moles.}$

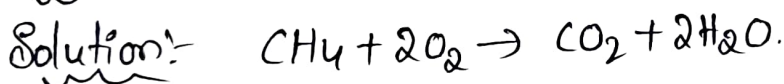
For 0.1 moles of Zn , 0.1 mole of ZnSO_4 &
0.1 mole of H_2 is liberated.

1 mole of $\text{ZnSO}_4 = 65 + 32 + 4(16) = 161 \text{ gms.}$

0.1 moles of $\text{ZnSO}_4 = 0.1 \times 161 = \underline{16.1 \text{ gms}}$

0.1 moles H_2 volume = $0.1 \times 22.4 \text{ litres}$
= 2.24 litres

Q15) Ans:- 2

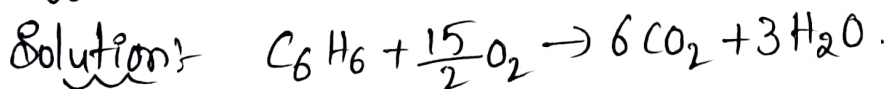


Given, volume of $\text{CH}_4 = 5 \text{ mL}$.

For 1 mole CH_4 , 2 moles of O_2 , 1 mole of CO_2

$\text{O}_2 = 2 \times 5 \text{ mL} = 10 \text{ mL}$, $\text{CO}_2 = 1 \times 5 = 5 \text{ mL}$.

Q16) Ans:- 1



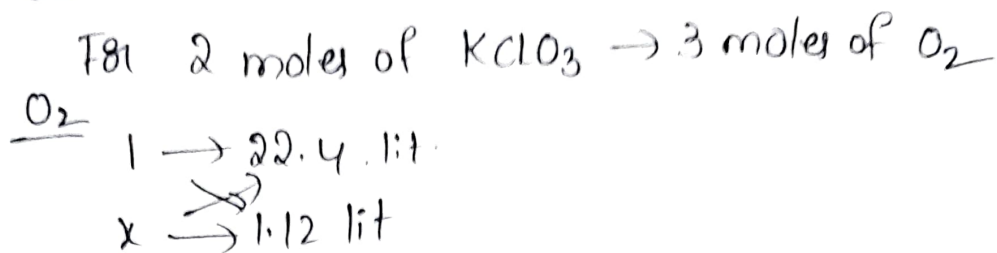
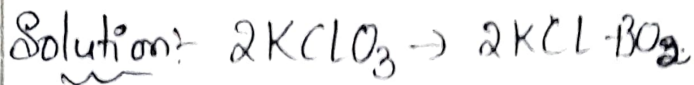
$\text{C}_6\text{H}_6 = (6 \times 12) + 6 = 78 \text{ gms.}$

Given $\text{C}_6\text{H}_6 = 39 \text{ gms}$ i.e. 0.5 moles.

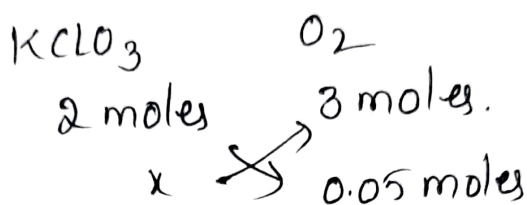
Volume of 0.5 moles of $\text{C}_6\text{H}_6 = 11.2 \text{ litres.}$

Volume of $\text{O}_2 = \frac{15}{2} \times 11.2 = \underline{84 \text{ litres}}$

Q17) Ans:- 2



$$x = \frac{1.12}{22.4} = 0.05 \text{ moles.}$$



$$x = \frac{2 \times 0.05}{3} = 0.033 \text{ moles.}$$

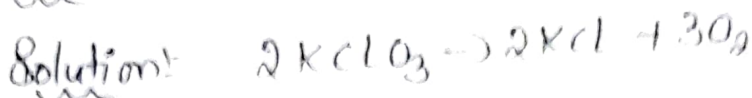
$$\begin{aligned} 1 \text{ mole } \text{KClO}_3 &= 39 + 35.5 + 48 \\ &= 122.5 \text{ gms.} \end{aligned}$$

$$\begin{aligned} \text{For } 0.033 \text{ moles of } \text{KClO}_3 &= 122.5 \times 0.033 \\ &= 5.6265 \text{ gms.} \end{aligned}$$

$$\begin{aligned} 1 \text{ mole of } \text{KCl} &= 39 + 35.5 \\ &= 74.5 \text{ gms.} \end{aligned}$$

$$\begin{aligned} 0.033 \text{ moles of } \text{KCl} &= 0.033 \times 74.5 \\ &= \underline{2.45 \text{ gms. of KCl}} \end{aligned}$$

Q18) Ans: 4.



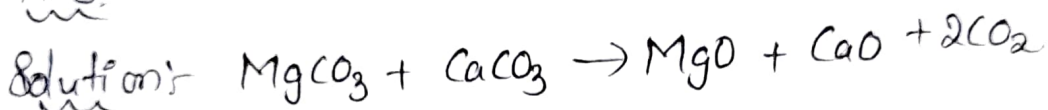
$$\begin{array}{l} \text{O}_2 \\ 1 \text{ mole} \rightarrow 22.4 \text{ litres} \\ x \rightarrow 67.2 \text{ litres} \end{array}$$

$$x = \frac{67.2}{22.4} = 3.013 \text{ moles}$$



$$x = \frac{2 \times 3.013}{3} = 2.008$$

Q19) Ans: 2



Given, $\text{MgCO}_3 + \text{CaCO}_3 = 18.4 \text{ gms.}$

i.e, 8.4 gms of MgCO_3 and 10 gms of CaCO_3

$\rightarrow$ 0.1 mole of MgCO_3 , 0.1 moles of CaCO_3

produce 0.2 moles of CO_2

$\rightarrow$ 0.2 moles CO_2 volume = $0.2 \times 22.4 = 4.48 \text{ L}$

Q20) Ans: 3.

Solution: Equal volumes of different gases contain equal no. of moles.

$$\begin{array}{l} \text{O}_2 \rightarrow 1 \text{ mole} \rightarrow 32 \text{ grams} \\ x \rightarrow 4 \end{array} \quad x = \frac{4}{32} = 0.125 \text{ moles.}$$

For 0.125 moles of $\text{H}_2 = 0.125 \times 2 = 0.25 \text{ gm}$

Q21) Ans:- A, D.

Solution:- $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$.

Given $\text{H}_2 = 4\text{g}$, $\text{O}_2 = 4\text{g}$ But

For 4gms of H_2 requires 32 grams of O_2 .

So O_2 is a limiting reagent.

O_2 1 mole $\rightarrow 32\text{gms} \rightarrow 22.4\text{ litres}$
 $4\text{gms} \rightarrow x$

$$x = \frac{22.4 \times 4}{32} = 2.8 \text{ litres.}$$

For 2.8 litres of O_2 , $\text{H}_2\text{O} = ?$

$$= 2 \times 2.8 = \text{litres of H}_2\text{O}$$

$$= \underline{5.6 \text{ litres.}}$$

Q22) Ans:- A.

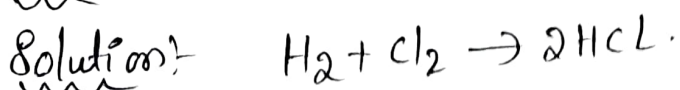
Solution:- $\text{CH}_4 = 12 + 4 = 16\text{gms}$

Given $\text{CH}_4 = 8\text{gms}$ means 0.5 moles which can occupy 11.2 litres .

$\text{N}_2 = 28\text{gms}$, but given 14gms i.e 0.5 moles , this also occupy 11.2 litres .

Equal volumes of all gases under the same conditions contain equal no. of molecules.

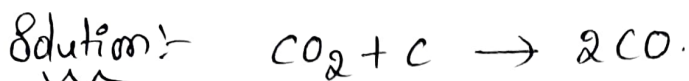
Q23) Ans:- A.



The volume of H_2 , Cl_2 & HCl is 1:1:2.

→ The substance always react in such a way that their volume ratio is simple whole number.

Q24) Ans:- 4.



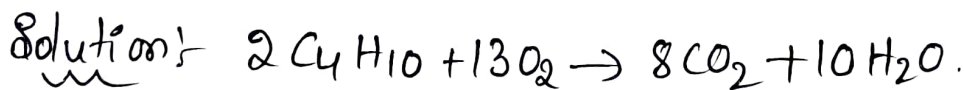
Given:- Volume of $\text{CO}_2 = 26 \text{ C.C.}$

Volume of CO_2 & CO in the ratio of 1:2

If volume of $\text{CO}_2 = 26 \text{ CC}$ then

$$\text{volume of CO} = 2 \times 26 = \underline{52 \text{ CC}}$$

Q25) Ans:-

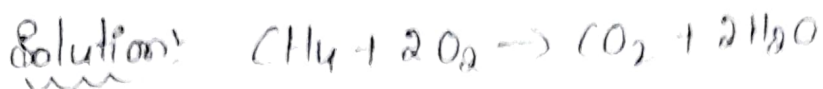


Volume of C_4H_{10} & CO_2 is in the ratio of
2:8 i.e, 1:4.

Given, volume of butane = 2 litres.

$$\begin{aligned} \text{volume of CO}_2 &= 2 \times 4 \\ &= 8 \text{ litres} \end{aligned}$$

Q26) Ans: 3.



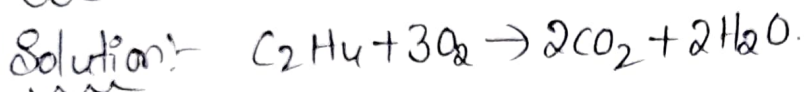
The volume of CH_4 & O_2 in the ratio of 1:2

Given, volume of methane = 10 litres.

$$\begin{aligned}\text{Volume of } \text{O}_2 &= 2 \times 10 \\ &= 20 \text{ litres}\end{aligned}$$

Integer Type

Q27) Ans: 6.



The volume of C_2H_4 & O_2 in the ratio of
1:3

Given volume of ethene = 2ml.

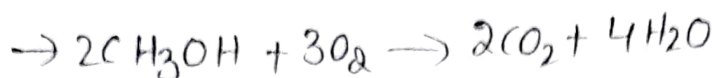
$$\text{Volume of } \text{O}_2 = 3 \times 2 = \underline{6\text{ml}}$$

Matrix Matching

Q28) Ans: A-5, B-1, C-2, D-3.

Solution:

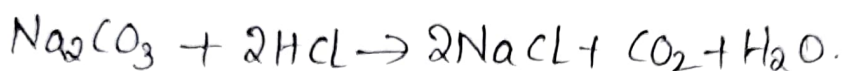
A) CH_3OH



CH_3OH & CO_2 are in 1:1 ratio.

For 1 mole of $\text{CO}_2 = 22.4$ litres.

B) $1.06\text{g Na}_2\text{CO}_3$ Excess HCl



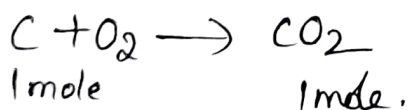
Na_2CO_3 & CO_2 are in 1:1 ratio.

1 mole $\text{Na}_2\text{CO}_3 = 106\text{gms}$.

Given 1.06gms , so 0.01 moles.

0.01 moles of CO_2 occupies 0.224 litres

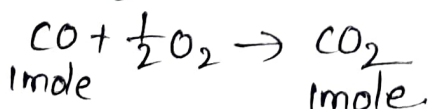
C) 2.4g C Excess O_2



$$\begin{array}{l} \underline{\text{C}} \\ 1\text{mole} \rightarrow 12\text{gms} \\ x \rightarrow 2.4\text{gms} \end{array} \quad \left| \quad x = \frac{2.4}{12} = 0.2\text{ moles} \right.$$

0.2 moles CO_2 occupies 4.48 litres

D) 0.56g CO O_2



$$\begin{array}{l} \underline{\text{CO}} \\ 1 \rightarrow 28\text{gms} \\ x \rightarrow 0.56\text{gms} \end{array} \quad \left| \quad \begin{array}{l} x = \frac{0.56}{28} \\ = 0.02\text{ moles} \end{array} \right. \quad \left| \quad \begin{array}{l} \text{Volume of } \text{CO}_2 = \\ = 0.02 \times 22.4 \\ = 0.448\text{ litres} \end{array} \right.$$