Doubt Clearing Session

Course on Mole Concept for Class XI

akhilesh • Lesson 4 • June 10, 2021

25) $6\,LiH + 1\,[8\,BF_3] \longrightarrow 6\,LiBF_4 + B_2H_6$

2 | 2

$\frac{1}{8} \times 2 = \frac{1}{4}$

$1 = W$ $\quad$ W_1

(31)

$$Na_2CO_3 \xrightarrow{\Delta} X$$

x mol

$$2NaHCO_3 \xrightarrow{\Delta} Na_2CO_3(s) + CO_2(g) + H_2O(g)$$

y mol

$y/2$ $\quad$ $y/2$ $\quad$ $y/2$

$$106x + 84y = 2 \quad \text{--- (1)}$$

$$\frac{y}{2} \times 44 + \frac{y}{2} \times 18 = 0.11 \quad \text{--- (2)}$$

37

$$CaCO_3 + 2HCl \longrightarrow CaCl_2 + H_2O + CO_2$$

$25 \times \frac{80}{100}$ gm

$= 20$ gm

$\frac{}{100}$

$= 0.2$ mol

0.2

0.2×22.4

1st group carbonates

$$Na_2CO_3 \xrightarrow{\Delta} X$$

$$K_2CO_3 \xrightarrow{\Delta} X$$

except $Li_2CO_{3(s)} \longrightarrow Li_2O(s) + CO_2(g)\uparrow$

2nd group carbonates

$$CaCO_3 \xrightarrow{\Delta} CaO + CO_2(g)\uparrow$$

1st group Bicarbonates

$$2NaHCO_3(s) \xrightarrow{\Delta} Na_2CO_3(s) + CO_2(g)\uparrow + H_2O(g)\uparrow$$

$$2LiHCO_3(s) \longrightarrow Li_2O(s) + 2CO_2(g)\uparrow + H_2O(g)$$

2nd group Bicarbonates

$$Ca(HCO_3)_2 \longrightarrow CaO(s) + 2CO_2(g) + H_2O(g)$$

(4) 1 gram-ion of Al^{3+}

1 mole Al^{3+} $3 \times N_A$

(5) A B

40 80

x gm $\frac{2x}{}$ gm

$\frac{x}{40}$ mol $\frac{2x}{80} = \frac{x}{40}$

(8) 3.1 mg NO_3^-

$7 + 24 + 1$

$= 32$ electrons

$$\frac{\frac{3.1 \times 10^{-3}}{62} \times N_A \times 32}{}$$

$$\frac{112}{22400}\ \text{mol} \times N_A$$

$$\frac{\frac{112}{224} \times 46}{1.15} = \text{Volume}$$

$CaCO_3$ 80% pure

200 gm sample of $CaCO_3$

required $W_{CaCO_3} = 500$ gm

$x \times \frac{80}{100} = 500$

$x = \frac{100}{80} \times 500 = 625$

$W_{CaCO_3} = 200 \times \frac{80}{100} = 160$ gm

$$2A \xrightarrow{80\%} B$$

10 mol

$$\frac{1}{2} \times 10 \times \left(\frac{80}{100}\right) = 4$$

x

$$2A \xrightarrow{80\%} B$$

$$20 \times \frac{100}{80}$$

~~10 mol~~

$$= 25$$

Type-5 problems :→ Problems related with sequence of Rxn :→

$Cl_2 + 2KOH \xrightarrow{80\%} KClO + KCl + H_2O$

$x \times 0.8$ $\quad$ $x \times 0.8$

x $\quad$ $2x$ $\quad$ 75%

$3KClO \longrightarrow KClO_3 + 2KCl$

$\frac{x}{3} \times 0.8 \times \frac{3}{4}$ $\quad$ $\frac{2}{3}x \times \frac{4}{5} \times \frac{3}{4} = \frac{16}{}$

$(x \times 0.8)$

$4KClO_3 \xrightarrow{50\%} 3KClO_4 + KCl$

$\frac{x}{4} \times (0.8)\left(\frac{3}{4}\right)\frac{1}{2}$ $\quad$ $\frac{x}{12} \times \frac{4}{5} \times \frac{3}{4} \times \frac{1}{2}$

$\frac{21x}{12}$

$= \underline{\text{lumoles}}$

Q. Calculate the mass of $KClO_4$ produced by 2840 gm Cl_2.

K = 39
Cl = 35.5

$$\text{moles of } Cl_2 = \frac{2840}{71} = 40 \text{ moles} = x$$

A) 710 gm ✓

B) 1385 gm

C) $\frac{1380 \text{ gm}}{71 \text{ gm}}$

D)

(b) Calculate the total moles KCl produced.

(A) 40 (C) 140

(B) 10 (D) 70

$$\frac{x}{4} \times \left(\frac{80}{12}\right) \times \left(\frac{75}{13}\right) \times \left(\frac{52}{12}\right)$$

$$= 10 \times \left(\frac{4}{5} \times \frac{3}{4} \times \frac{1}{2}\right)$$

$$= 3$$

(5) Calculate ~~mass~~ moles of $KClO_4$ produced by 2840 gm Cl_2 if yield of Rxn 1, 2, 3 are 80%, 75%, 50% respectively.

A) 10

B) 30

C) 3

D) 0.3

* Calculate moles of KCl produced by 1^{st} Rxn = 32

2^{nd} Rxn = 16

3^{rd} Rxn = 1

Considering yield to be 80%, 75%, 450%..

Calculate moles of Fe_3O_4 produced by 560 gm Fe. As per given Rxn.

A) 10/3
B) 10
C) None

$$\underset{10}{Fe} + Br_2 \longrightarrow \underset{10}{FeBr_2}$$

$$3\,\underset{10}{FeBr_2} + Br_2 \longrightarrow \underset{10/3}{Fe_3Br_8}$$

$$\underset{10/3}{Fe_3Br_8} + 4Na_2O \longrightarrow Fe_3O_4 + 8NaBr$$

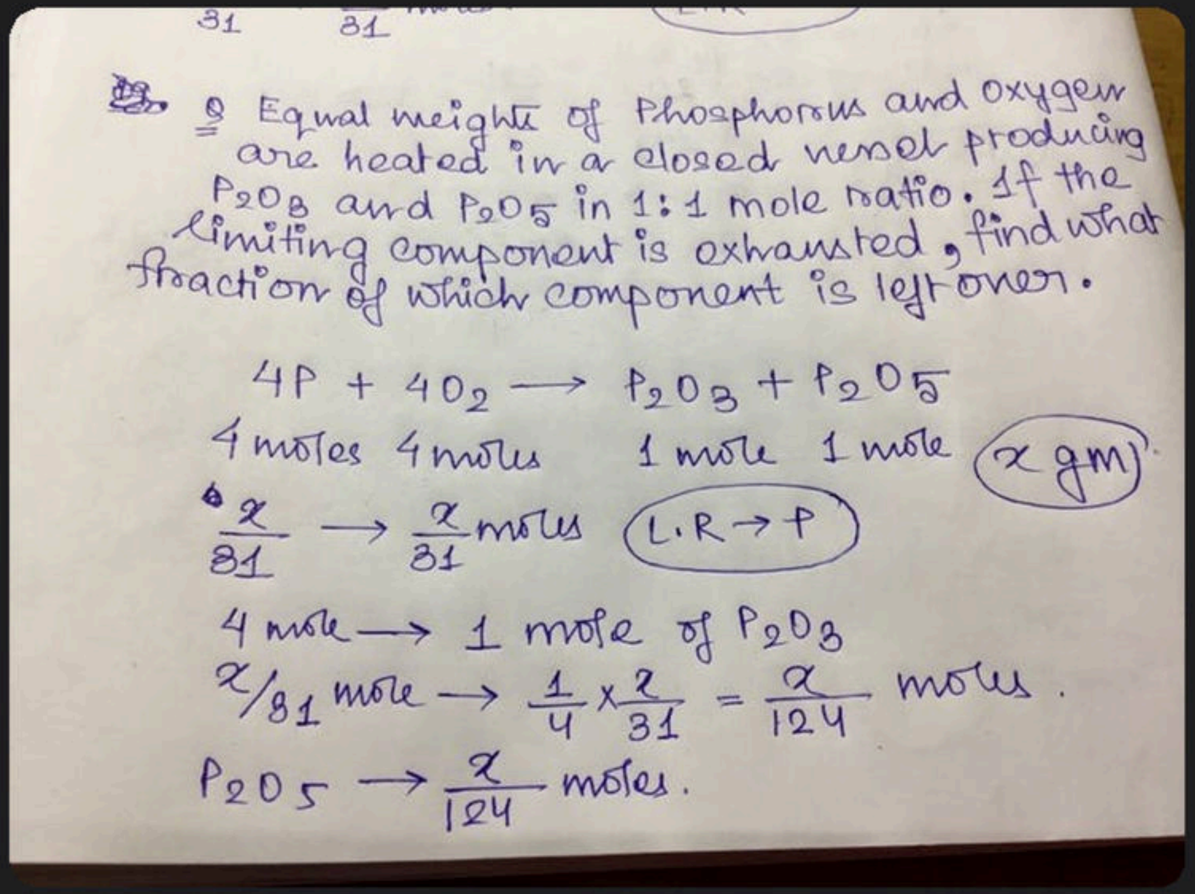
$10/3$

5-1 33-43

0-1 16-30

Question
from SRESTTHA GHOSH

Sorry sir for disturbing.....Cannot understand how to proceed for this problem on L.R



$N_2 + 3H_2 \longrightarrow 2NH_3$

1 mol

x

$\frac{2}{3}$