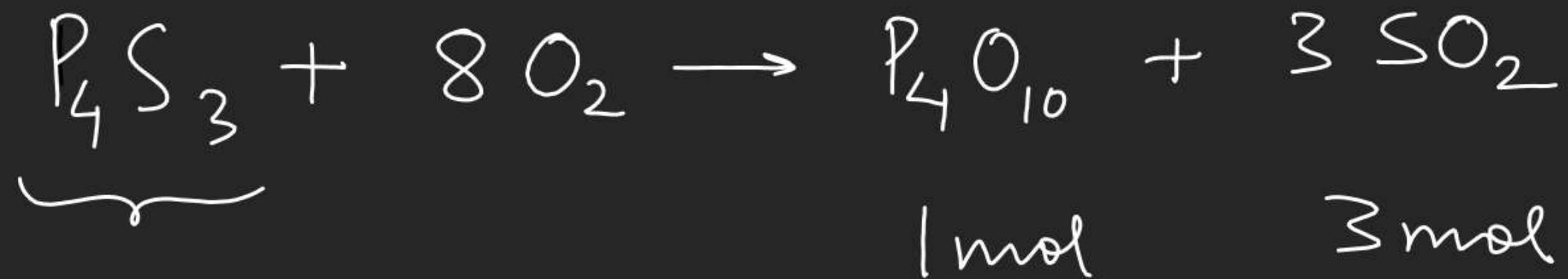


MOLE CONCEPT

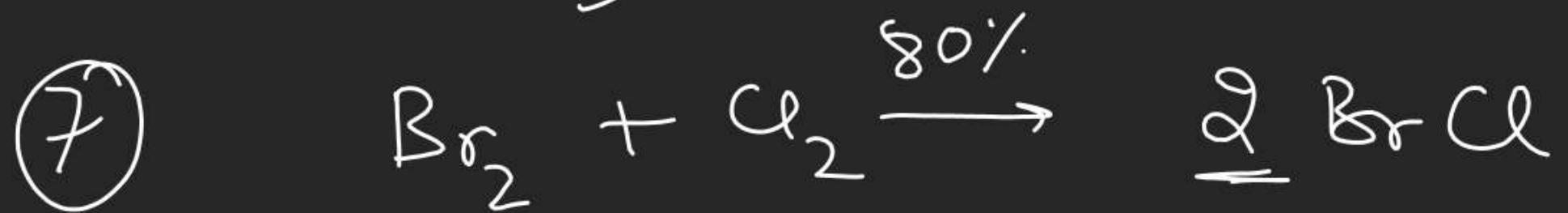
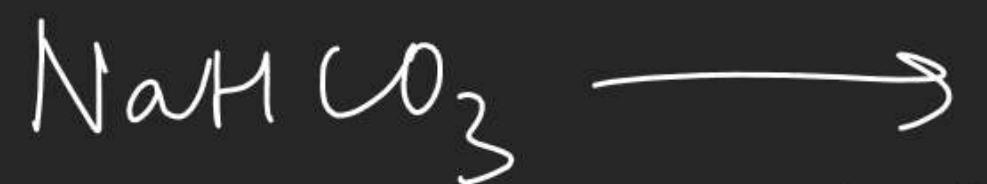
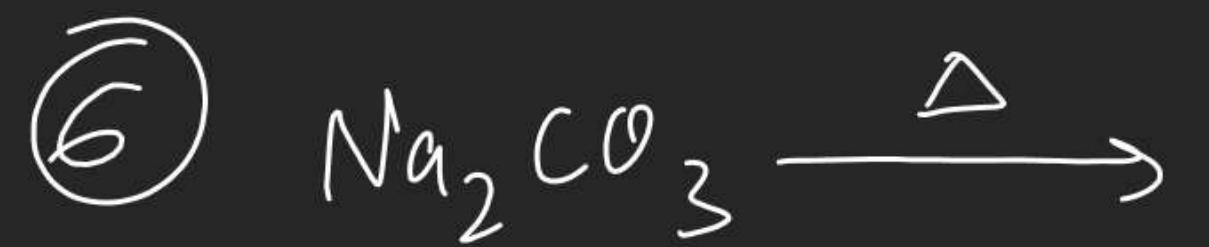


$$284 \text{ gm} \quad 3 \times 64 = 192 \text{ gm}$$

$$\left(\frac{1}{3} \times \frac{1}{64} \text{ mol} \right) \times > 1 \text{ gm}$$

1 gm

 $\frac{1}{64} \text{ mol}$



$$\begin{array}{ccc} 0.025 & 0.025 \\ 0.005 & 0.005 \end{array}$$

$$\begin{array}{c} 0.025 \times 80 \\ \xrightarrow{100} \times 2 \\ 0.04 \end{array}$$

/, by man, ∵ by mol & Mang : →

Apple

3

Mango

1

$$\% \text{ by number} = \frac{3}{4} \times 100 = 75\%$$

mass of each

20 gm

mass

60 gm

% by mass

60%

Apple

 $3N_A$

75%

Mango

 N_A

25%

40 gm

40 gm

40%

3 mol

1 mol

$$\frac{1}{4} \times 100 = 25\%$$

$\% \text{ by number} = \% \text{ by mol}$

Q.

He

% by mol

50%

let the mol

50 mol
1 mol

mass

4 gm

% by mass

$$\frac{4}{20} \times 100 \\ = 20\%$$

CH₄

50%

50 mol
1 mol

16 gm

$$\frac{16}{20} \times 100 \\ = 80\%$$

% by masslet the man
moles

He

50%

$$50 \text{ gm} \\ 16 \text{ gm} \\ \frac{16}{4} \\ = 4$$

% by mol

$$\frac{4}{5} \times 100 \\ = 80\%$$

CH₄

50%

$$50 \text{ gm} \\ 16 \text{ gm} \\ \frac{16}{16} \\ = 1$$

$$\frac{1}{5} \times 100 \\ = 20\%$$

	Ar	Br_2
% by mol	60%	40%
let the mol	6 mol	4 mol
mass	3 mol	2 mol
	120 gm	2×160 $= 320$
% by mass	$\frac{120}{440} \times 100$ $= \frac{30}{11}$	

	Ar	Br_2
% by mass	50%	50%
let the mole	160 gm	160 gm
	$\frac{160}{40} = 4$	$\frac{160}{160} = 1$
% by mole	<u>80%</u>	<u>20%</u>

$$\text{Avg Marks} = \frac{n_1 M_1 + n_2 M_2 + \dots}{n_1 + n_2 + \dots} = \frac{\text{Total Marks}}{\text{Total no of students}}$$



$M_{\text{avg}} = \frac{n_1 M_1 + n_2 M_2}{n_1 + n_2}$

$n_1 = \text{no. of atoms}$
or
 $\text{no. of moles of atoms}$

Total mass
Total moles = M_{avg}

Q. Cl^{35}

Cl^{37}

75%

25% by moles

let the
moles

75 mol

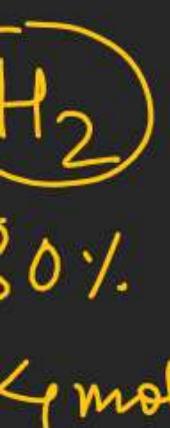
25 mol

3 mol

1 mol

$$\begin{aligned} M_{\text{avg}} &= \frac{3 \times 35 + 1 \times 37}{3+1} \\ &= 35.5 \end{aligned}$$

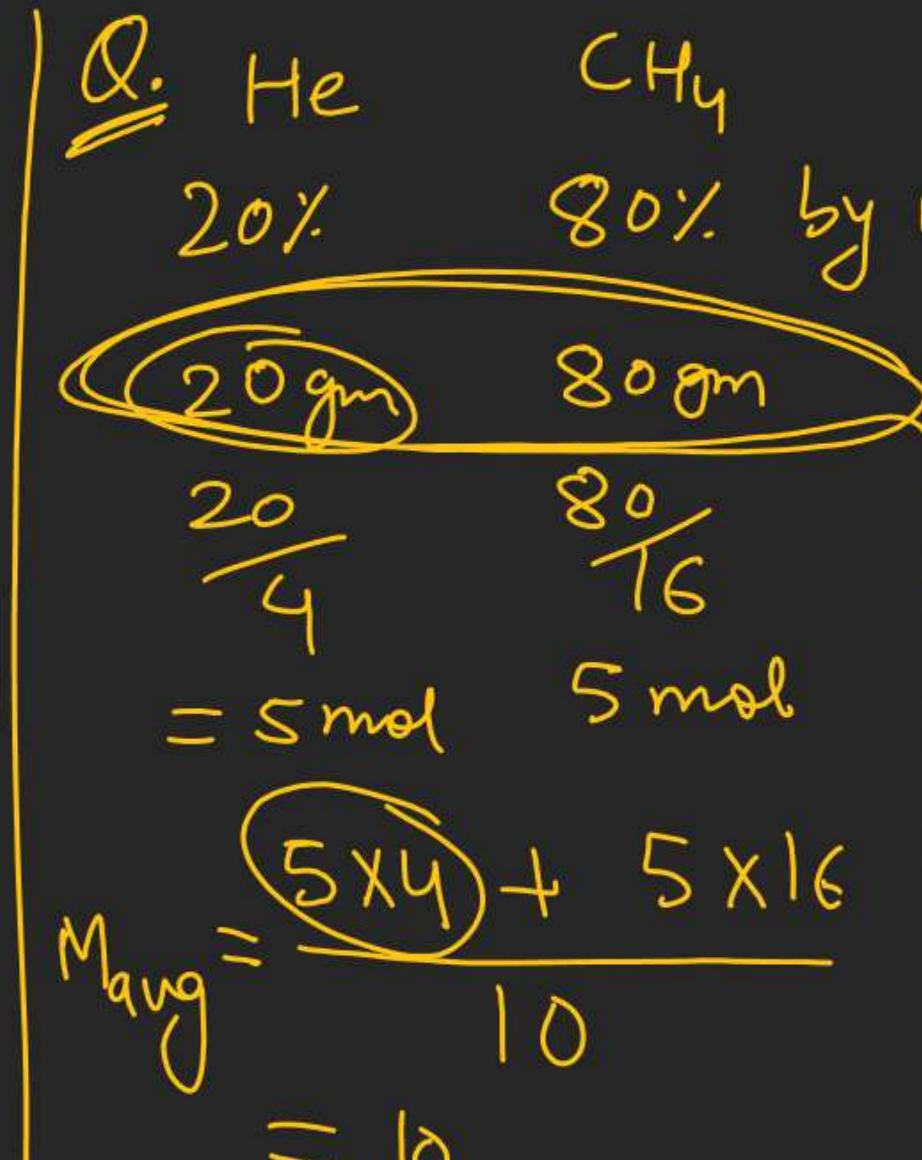
find average
atomic mass



$$1 \times 2 + 1 \times 4$$

$$\frac{12}{5} = 2.4$$

He 4
20% by mol
1 mol



$$M_{\text{avg}} = \frac{\text{Total mass}}{\text{Total moles}}$$

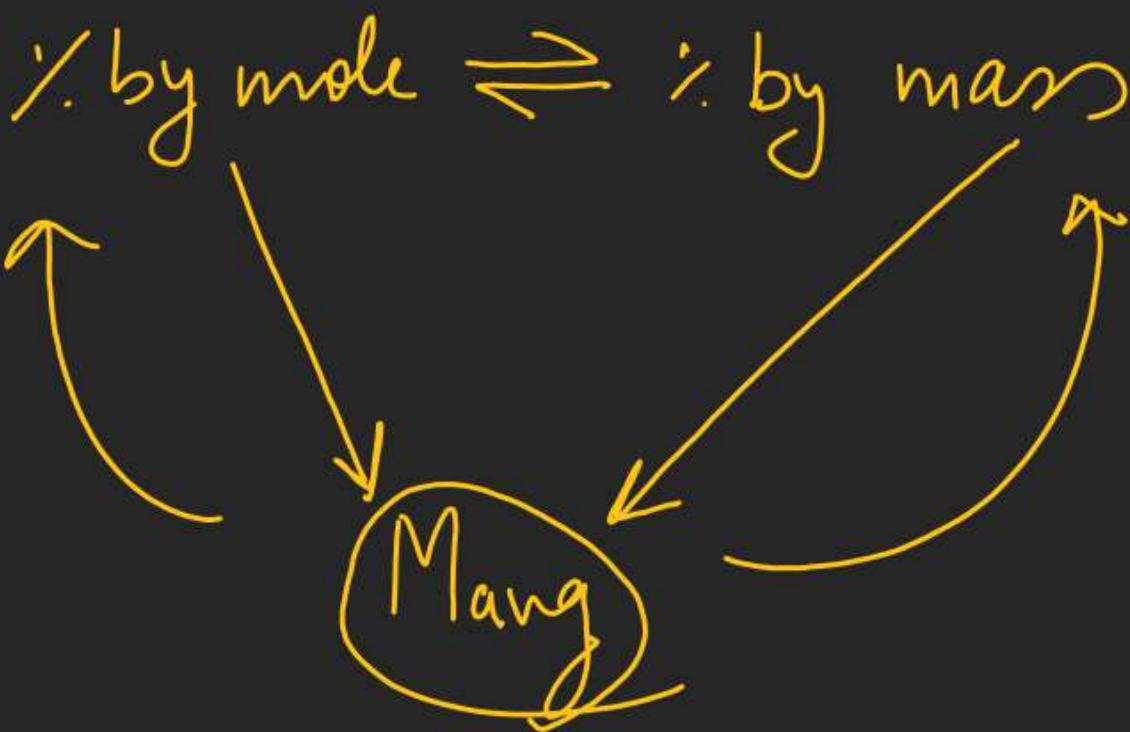
$$M_{\text{avg}} = \frac{W_1 + W_2}{\frac{W_1}{M_1} + \frac{W_2}{M_2}}$$

$$= \frac{20 + 80}{\frac{20}{4} + \frac{80}{16}} = \frac{100}{5+5} = 10$$

$$M_{\text{avg}} = \frac{\text{Total mass}}{\text{Total moles}}$$

$$= \frac{n_1 M_1 + n_2 M_2}{n_1 + n_2}$$

$$= \frac{w_1 + w_2}{\frac{w_1}{M_1} + \frac{w_2}{M_2}}$$



A mixture of N_2 and O_2 has avg molecular weight 29.

find % by mol of N_2 & O_2 .

let the molar % $N_2 = x$

" " " " $O_2 = 100 - x$

$$M_{avg} = \frac{n_1 M_1 + n_2 M_2}{n_1 + n_2}$$

$$29 = \frac{x \times 28 + (100-x)32}{100-x+x}$$

$$29w = -4x + 32w$$

$$4x = 3w$$

$$x = 75 \%$$

= % by mol N_2

A mixture of CH_4 & O_2 has average molar mass 24

find ① % by moles

② % by mass

let the mole of $\text{CH}_4 = x$

" " $\text{O}_2 = 100 - x$

$$24 = \frac{16x + (100-x)32}{100}$$

$$\underline{x = 50\%}$$

let the mass of $\text{CH}_4 = x$

" " $\text{O}_2 = 100 - x$

$\frac{\text{no. of moles}}{3}$

$\frac{200 - x}{8}$

$$24 = \frac{w_1 + w_2}{\frac{w_1}{M_1} + \frac{w_2}{M_2}} = \frac{x + 100 - x}{\frac{x}{16} + \frac{100 - x}{32}}$$

$$\frac{x}{16} + \frac{100 - x}{32} = \frac{100}{24}$$

$$\frac{2x + 100 - x}{32 \times 4} = \frac{100}{24 \times 3}$$

$$\frac{3x + 300}{128} = \frac{100}{24 \times 3}$$

$$\underline{x = 100/3}$$

J-Mains

5 < 6, 7, 8, 10, 11

14 - 16, 18, 21

J-Adv

1 - 4

11th