

## ONLY ONE OPTION CORRECT TYPE

1. (B)

Sol.  $\text{Moles} = \frac{\text{wt.}}{\text{Molecular Mass}}$

$$\text{Molecular Mass} = \frac{1}{0.00318} = 314 \text{ gm}$$

	C	H	O
Atoms ratio	$15 \times \frac{70}{100}$	15	1
$\Rightarrow$	10.5	15	1
$\Rightarrow$	21	30	2

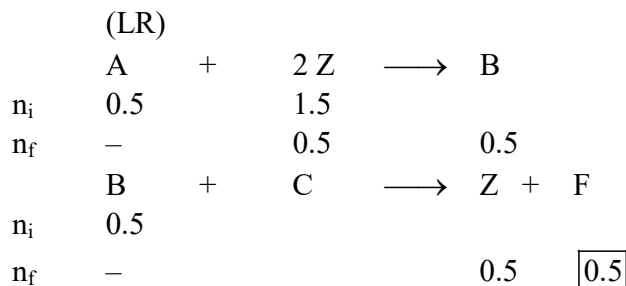
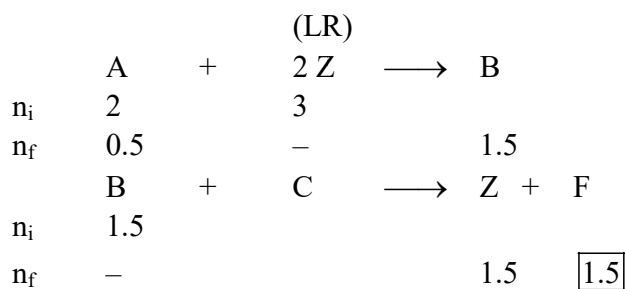
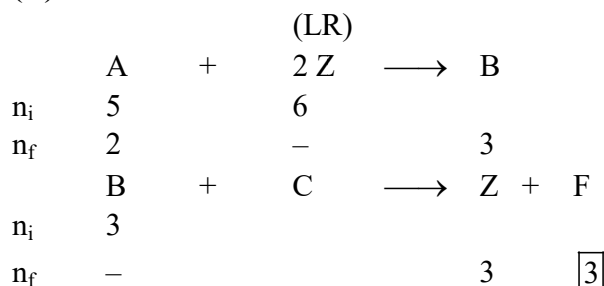
 Empirical formula =  $\text{C}_{21} \text{H}_{30} \text{O}_2$ 

Empirical formula mass = 314

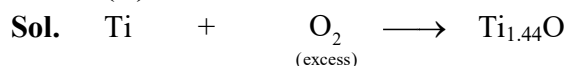
 Our compound is  $\text{C}_{21} \text{H}_{30} \text{O}_2$ 

2. (C)

Sol.


 Since A has finished, so more reaction total moles of F =  $3 + 1.5 + 0.5 = 5$

3. (C)



1.44 gram x gram

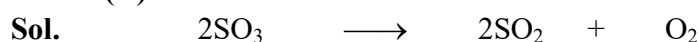
Applying POAC on Ti

$$\frac{1.44}{48} \times 1 = \frac{x}{1.44(48) + 16} \times 1.44$$

$$x = 1.44 + \frac{16}{48}$$

$$x = 1.77 \text{ gm}$$

4. (D)



$$n_i \quad \frac{160}{80} = 2$$

$$n_f \quad - \quad 4 \quad 2 \text{ moles}$$



$$n_i \quad \frac{144}{72} = 2$$

$$n_f \quad - \quad 1 \quad 1$$

Moles of  $\text{Fe}_2\text{O}_3$  formed = 1

$$\begin{aligned} \text{Mass of } \text{Fe}_2\text{O}_3 &= 1 \times 160 \\ &= 160 \text{ gm} \end{aligned}$$

5. (C)

**Sol.** Molecular mass of MAGGI = 169



$$\begin{aligned} \% \text{ mass of Na} &= \frac{23}{169} \times 100 \\ &= 13.6 \% \end{aligned}$$

6. (B,D)

**Sol.** 1 gm molecule of Oxygen = 1 mole of  $\text{O}_2$   
= 32 gm

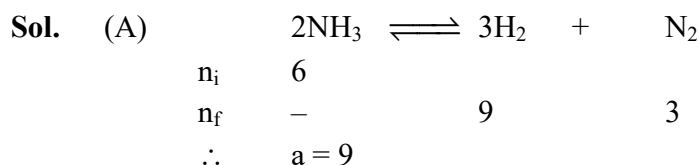
(A) 12 gram

(B) 1 gm molecule of  $\text{O}_3$  = 1 mole  $\text{O}_3$   
= 48 gm

(C) 4 gm-atom of Hydrogen = 4 mole atom of H  
=  $4 \times 1$  gm  
= 4 gm

(D) 1.12 lit of water = 1120 ml  
= 1120 gram

7. (a) 9 moles, (b) 2, (c) 5, (d) 50



(B) Vapour Density =  $\frac{\text{Molar Mass}}{2}$

$$\frac{D_{\text{SO}_2}}{D_{\text{O}_2}} = \frac{(64/2)}{(32/2)} = 2$$

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

$$33.15 = \frac{n_1(17) + n_2(34)}{n_1 + n_2}$$

$$16.15 n_1 = 0.85 n_2$$

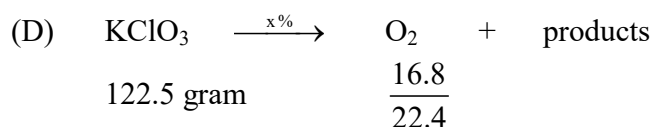
$$\frac{n_2}{n_1} = \frac{16.15}{0.85}$$

$$\frac{n_1}{n_1 + n_2} = \frac{0.85}{17}$$

$$\% \text{ moles of NH}_3 = \frac{n_1}{n_1 + n_2} \times 100$$

$$= \frac{0.85}{17} \times 100$$

$$= 5\%$$



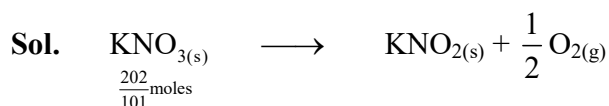
Applying POAC on O

$$\frac{122.5}{122.5} \times 3 \times \frac{x}{100} = \frac{16.8}{22.4} \times 2$$

$$\frac{3x}{100} = \frac{3}{2}$$

$$x = 50$$

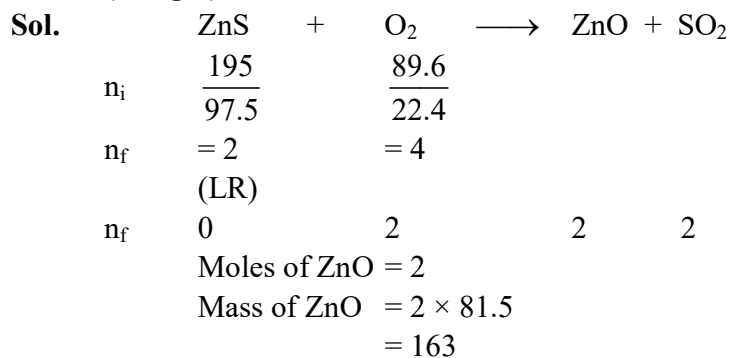
8. (15.84)



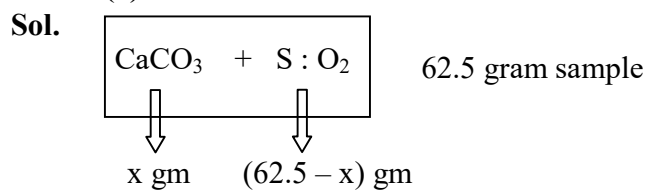
$$\text{Moles of O}_2 = \frac{202}{101} \times \frac{1}{2}$$

$$\begin{aligned}
 &= 1 \text{ mole} \\
 \text{Mass of O}_2 &= 32 \text{ gram} \\
 \% \text{ wt. loss} &= \frac{32}{202} \times 100 \\
 &= 15.84\%
 \end{aligned}$$

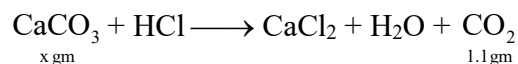
9. (163 gm)



10. (4)



SiO<sub>2</sub> is acidic in nature & CaCO<sub>3</sub> is basic in nature.



Moles of CaCO<sub>3</sub> = Moles of CO<sub>2</sub>

$$\frac{x}{100} = \frac{1.1}{44}$$

$$x = \frac{1}{40} \times 100 = 2.5$$

$$\begin{aligned}
 \% \text{ mass of CaCO}_3 &= \frac{x}{62.5} \times 100 \\
 &= \frac{2.5}{62.5} \times 100 = 4\%
 \end{aligned}$$