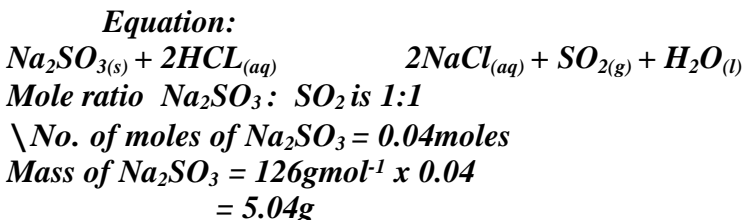


When a magnesium ribbon is heated in air it combines with oxygen forming magnesium oxide.
 When potassium manganate (VII) is heated it decomposes giving off oxygen which escapes in air

2. $RFM\ of\ NaOH = 40$
 $Moles\ of\ NaOH = \frac{8}{40} = 0.2M\ P$
 $Moles\ of\ NaOH\ in\ 25cm^3$
 $\frac{25 \times 0.2}{1000} = 0.005\ P$
 $Mole\ ratio\ 1:2$
 $Moles\ of\ acid = \frac{0.005}{2}$
 $= 0.0025$
 $\frac{1 \times 0.245}{0.0025} = 98\ P$

3. $No.\ of\ moles\ of\ HNO_3\ acid$
 $\frac{50 \times 2}{1000} = 0.1\ moles$
 $Mole\ ratio\ 1:1\ P$
 $The\ KOH\ will\ have\ 0.1\ moles;\ \frac{0.1 \times 100}{50} = 0.2\ moles$
 $Then\ D\ grams\ is\ 0.2 \times 56$
 $= 11.2g$

4. $Number\ of\ moles\ of\ Q = \frac{960cm^3 \times 1mole}{24000cm^3}$
 $= 0.04\ moles$



5. $From\ the\ equation$
 $- (3 \times 24)\ litres\ of\ chlorine\ react\ with\ iron\ to\ produce\ [(56 \times 2) + (35.5 \times 3)]\ g\ of\ FeCl_3.$
 $325\ g\ of\ FeCl_3\ is\ produced\ by\ 72\ litres\ of\ Cl_2$
 $Then\ 0.5g\ of\ FeCl_3\ is\ produced\ by:$
 $\frac{0.5 \times 72}{325} = 0.11078\ litres$
 $= 110.78\ cm^3$

6. $RMM\ (CH_3OOH) = 60\ P\ \frac{1}{2}\ P\ \frac{1}{2}$

Mass of 15cm³ and = 1.05 x 15 = 15.75g

Moles in 500cm³ solution = $\frac{15.75}{60} = 0.2625$ P 1

Molarity = $\frac{1000 \times 0.2625}{5000} = 0.525M$ P ½

7. *If 24000cm³ = 1mole*

150cm³ = ? P

$$\frac{150 \times 1}{24000}$$

$$= 0.00625 \text{ moles of } CO_2$$

Since the ratio of Na_2CO_3 ; O_2 produced is 1:1 the mass of $Na_2CO_3 = 0.00625 \times 106 = 0.6625g$

Na_2CO_3	H_2O
Mass 0.6625g	1.0125g
RFM 106	18
Mole $0.6625 = \frac{0.00625}{106}$	$\frac{1.0125}{18} = 0.5625$
Ratio $\frac{0.00625}{0.00625} = 1$	$\frac{18}{0.05625} = 9$
$Na_2CO_3 \cdot 9H_2O$	



$$R.F.M \text{ of } MgCl_2 = 24 + 71 = 95$$

$$\text{Moles of Mass} = \frac{1.7}{95}$$

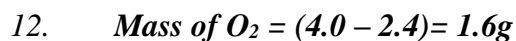
$$= 0.01789 \text{ moles}$$

1 mole of $MgCl_2 = 2 \text{ moles of } Cl^- \text{ ions}$

$$0.01789 \text{ moles of } MgCl_2 = 0.01789 \times 2 = 0.03578 \text{ moles of } Cl^- \text{ ions}$$

$$1 \text{ mole} = 6.0 \times 10^{23} \text{ ions}$$

$$0.03578 \text{ moles} = \frac{0.03578 \times 6.0 \times 10^{23}}{1} = 2.1468 \times 10^{22} \text{ ions of } Cl^-$$



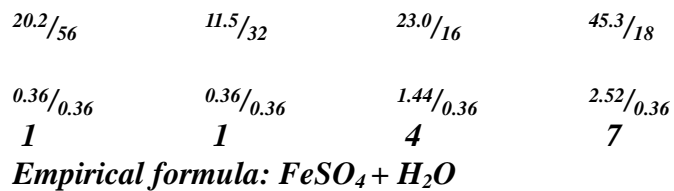
$$\text{Moles of } O_2 = \frac{1.6}{16} = 0.1$$

$$\text{If } 1 \text{ mol } O_2 \text{ occupies } 24000 \text{ cm}^3 \\ 0.1 \text{ Mol } O_2 = 0.1 \times 24000 = 2400 \text{ cm}^3$$

OR

$$\begin{array}{ccc} 2mg & : & O_2 \\ 2(24) & & 24000 \\ \frac{2.4}{2(24)} & = & \frac{x}{24000} \\ X = \frac{2.4 \times 24000}{2(2.4)} & = & 1200 \text{ cm}^3 \end{array}$$





ii) $6.95g = \frac{6.95}{278} = 0.025$
 \backslash $0.05 \text{ moles in } 250\text{cm}^3 = 0.025 \times \frac{1000}{250} = 0.1$