

№ 1.1



$$y = z; y = z = 2x; x = 3y = 3z$$

$$x + y + z + \gamma = 22$$

$$2y = 2x + 2x + 6x + 1x = 22$$

$$11y = 22$$

$$y = 2 - \text{кол-во атомов O}$$

$$y = z = 2x = 4 - \text{кол-во атомов H и Cl.}$$

$$x = 3y = 3z = 12 - \text{кол-во атомов C.}$$

Ответ:  $C_{12}H_4Cl_4O_2$ .

№ 2.1



$$M(KMnO_4) = 158 \text{ (г/моль.)}$$

$$M(K_2MnO_4) = 197 \text{ (г/моль.)}$$

$$M(K_2MnO_4) > M(KMnO_4)$$



Ag - металл

NO<sub>2</sub> - газ

O<sub>2</sub> - газ

53 г  
глицерин  
кетопол

1	2	3	4	5	6	7	8	9	10
8	10	10	5	2	6	6	6	6	6



СЕЧЕНОВСКИЙ  
УНИВЕРСИТЕТ

8X052

№ 3.1.

$$m(\text{HCl}) = 3193,75 \cdot 0,12 = 383,25 \text{ (г.)}$$

$$\nu(\text{HCl}) = \frac{383,25}{36,5} = 10,5 \text{ (моль.)}$$



$$\nu(\text{Mg}(\text{OH})_2) = x \text{ (моль.)} ; M(\text{Mg}(\text{OH})_2) = 17 \cdot 2 + 24 = 58 \text{ (г/моль.)}$$

$$\nu(\text{Al}(\text{OH})_3) = y \text{ (моль.)} ; M(\text{Al}(\text{OH})_3) = 17 \cdot 3 + 27 = 78 \text{ (г/моль.)}$$

$$\nu(\text{Mg}(\text{OH})_2) : \nu(\text{HCl})_1 = 1 : 2 \Rightarrow \nu(\text{HCl})_1 = 2x \text{ (моль.)}$$

$$\nu(\text{Al}(\text{OH})_3) : \nu(\text{HCl})_2 = 1 : 3 \Rightarrow \nu(\text{HCl})_2 = 3y \text{ (моль.)}$$

$$\nu(\text{HCl}) = \nu(\text{HCl})_1 + \nu(\text{HCl})_2 = 10,5 \text{ (моль.)}$$

$$\begin{cases} 58x + 78y = 282 \\ 2x + 3y = 10,5 \end{cases} \Leftrightarrow \begin{cases} 58x + 78y = 282 \\ x = 5,25 - 1,5y \end{cases} \Leftrightarrow \begin{cases} 304,5 - 87y + 78y = 282 \\ x = 5,25 - 1,5y \end{cases} \Leftrightarrow$$

$$\Leftrightarrow \begin{cases} 304,5 - 282 = 9y \\ x = 5,25 - 1,5y \end{cases} \Leftrightarrow \begin{cases} y = 2,5 \\ x = 5,25 - 2,5 \cdot 1,5 \end{cases} \Leftrightarrow \begin{cases} y = 2,5 \\ x = 5,25 - 3,75 = 1,5 \end{cases}$$

$$\nu(\text{Mg}(\text{OH})_2) = 1,5 \text{ (моль.)} ; m(\text{Mg}(\text{OH})_2) = 1,5 \cdot 58 = 87 \text{ (г.)}$$

$$\nu(\text{Al}(\text{OH})_3) = 2,5 \text{ (моль.)} ; m(\text{Al}(\text{OH})_3) = 2,5 \cdot 78 = 195 \text{ (г.)}$$

$$\omega(\text{Mg}(\text{OH})_2) = \frac{87}{282} = 0,3085 \approx 0,31 \quad 0,31 \cdot 100\% = 31\%$$

$$\omega(\text{Al}(\text{OH})_3) = \frac{195}{282} = 0,69148 \approx 0,69 \quad 0,69 \cdot 100\% = 69\%$$

Ответ: 31% (Mg(OH)<sub>2</sub>); 69% (Al(OH)<sub>3</sub>).

№ 6.1

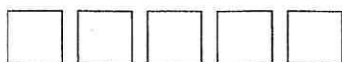
$$m(X) = x \text{ (г/моль.)}$$

~~$$1,5(x + 12 + 48) = 115 \quad x + 2 \cdot 31$$~~

~~$$1,5x + 90 = x + 62$$~~



СЕЧЕНОВСКИЙ  
УНИВЕРСИТЕТ



10

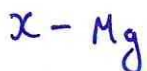
~~0,5x =~~

$$3x + 2 \cdot 31 = 1,5952(x + 12 + 48)$$

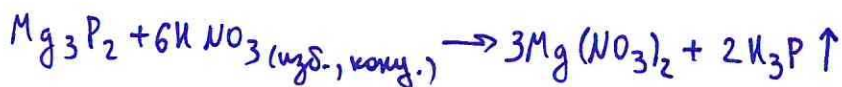
$$3x + 62 = 1,5952x + 95,712$$

$$1,4048x = 33,712$$

$$x = 23,998$$



$$\nu(\text{Mg}_3\text{P}_2) = \frac{26,8}{24 \cdot 3 + 62} = 0,2 \text{ (моль.)}$$



$$\nu(\text{H}_3\text{P}) = 2\nu(\text{Mg}_3\text{P}_2) = 0,4 \text{ (моль.)}$$

$$m(\text{H}_3\text{P}) = 0,4(31 + 3) = 34 \cdot 0,4 = 13,6 \text{ (г.)}$$

Ответ: Mg; 13,6 г.

~~№ 8.1~~

~~$$\nu(\text{KMnO}_4) = \frac{6,32}{39 + 55 + 64} = \frac{6,32}{158} = 0,04 \text{ (моль.)}$$~~



~~ν~~

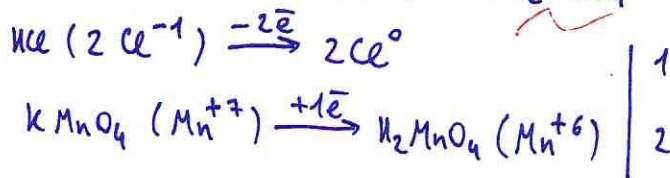
№ 4.1

$$M(\text{H}_2\text{SO}_4) = M(\text{H}_3\text{PO}_4) = 98 \text{ (г/моль.)}$$

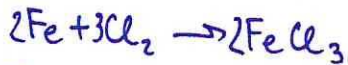


№8.1

$$\nu(\text{KMnO}_4) = \frac{6,32}{39+64+55} = 0,04 \text{ (моль.)}$$



$$\nu(\text{Cl}_2) = 0,5 \nu(\text{KMnO}_4) = 0,02 \text{ (моль.)}$$



$$\nu(\text{Cu}) = x \text{ (моль.)}; m(\text{Cu}) = 64x \text{ (г.)}$$

$$\nu(\text{Fe}) = y \text{ (моль.)}; m(\text{Fe}) = 56y \text{ (г.)}$$

$$64x + 56y$$

60





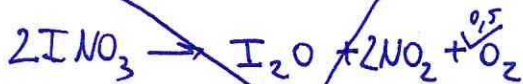
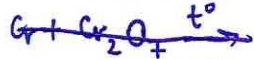
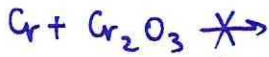
№ 10.1

Формула оксида -  $X_2O_3$

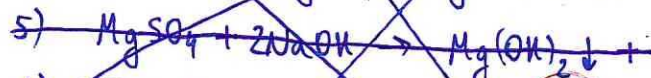
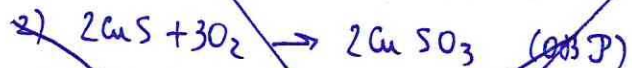
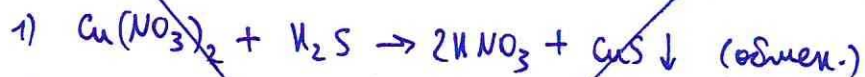
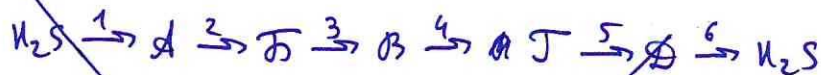
$D(x) = y$  (моль.);  $M(x) = x$  (г/моль.)

$$\begin{cases} xy = 20,8 \\ 0,5y(x+48) = 30,4 \end{cases} \Leftrightarrow \begin{cases} xy = 20,8 \\ xy + 24y = 30,4 \end{cases} \Leftrightarrow \begin{cases} xy = 20,8 \\ 24y = 9,6 \end{cases} \Leftrightarrow \begin{cases} x = 52 \\ y = 0,4 \end{cases}$$

$X - Cr$  ( $M = 52$  г/моль)



№5.1



3)

4)

5)

6)

