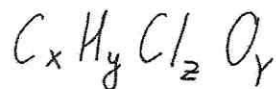


Задача 1.1.



$$y = z$$

$$y = 2Y$$

$$3y = x$$

$$x + y + z + Y = 22$$

1	2	3	4	5	6	7	8	9	10
8	10	10	10	8	8	8	8	8	2
2					26				
30					+ 8 = 34				

Решение

Σ 64.

$$y + y + 3y + \frac{y}{2} = 22$$

$$4y + \frac{y}{2} = 22$$

$$\frac{8y + y}{2} = 22$$

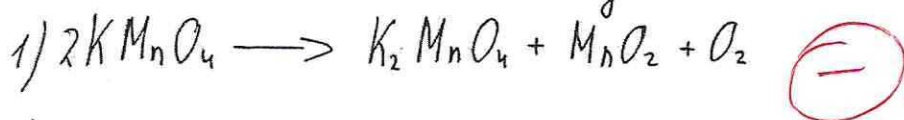
$$\frac{9y}{2} = 22$$

$$9y = 44$$

$y = 1 \Rightarrow$ Составим Брутто-формулу: $C_{12}H_4Cl_4O_2$ +

$$M(C_{12}H_4Cl_4O_2) = 12 \cdot 12 + 4 \cdot 1 + 4 \cdot 35,5 + 2 \cdot 16 = 322 \text{ г/моль}$$

Задача 2.1.



2)



СЕЧЕНОВСКИЙ
УНИВЕРСИТЕТ

8 x 0 6 7

$$m(\text{смеси}) = 282 \text{ г}$$

$$m(\text{HCl}) = 3193,75 \text{ г}$$

$$w(\text{HCl}) = 12\%$$

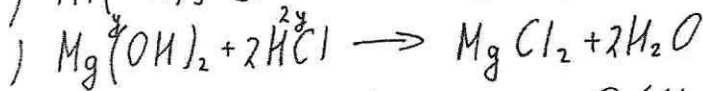
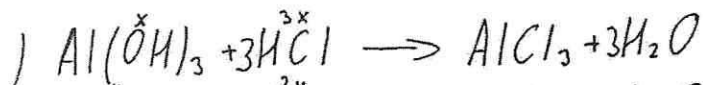
Задача 3.1

$$w(\text{Al}(\text{OH})_3) - ?$$

$$w(\text{Mg}(\text{OH})_2) - ?$$

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

$$V(\text{HCl}) = \frac{m}{M} = \frac{383,25 \text{ г}}{36,5 \frac{\text{г}}{\text{моль}}} = 10,5 \text{ моль}$$



Пусть $V(\text{Al}(\text{OH})_3) = x$, а $V(\text{Mg}(\text{OH})_2) = y$, тогда $V(\text{HCl}) = 3x$, а

$$V(\text{HCl}) = 2y$$

$$78x + 58y = 282$$

$$3x + 2y = 10,5$$

$$y = \frac{10,5 - 3x}{2}$$

$$78x + 58 \left(\frac{10,5 - 3x}{2} \right) = 282$$

$$78x + 304,5 - 87x = 282$$

$$9x = 22,5$$

$$x = 2,5 \text{ моль} - V(\text{Al}(\text{OH})_3)$$

$$y = \frac{10,5 - 3 \cdot 2,5}{2} = 1,5 \text{ моль} - V(\text{Mg}(\text{OH})_2)$$

$$m(\text{Al}(\text{OH})_3) = M \cdot V = 78 \frac{\text{г}}{\text{моль}} \cdot 2,5 \text{ моль} = 195 \text{ г}$$

$$m(\text{Mg}(\text{OH})_2) = M \cdot V = 58 \frac{\text{г}}{\text{моль}} \cdot 1,5 \text{ моль} = 87 \text{ г}$$

$$w(\text{Al}(\text{OH})_3) = \frac{195 \text{ г}}{282 \text{ г}} \cdot 100\% = 69,15\%$$

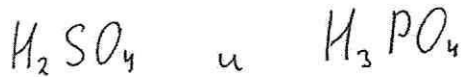
$$w(\text{Mg}(\text{OH})_2) = \frac{87 \text{ г}}{282 \text{ г}} \cdot 100\% = 30,85\%$$



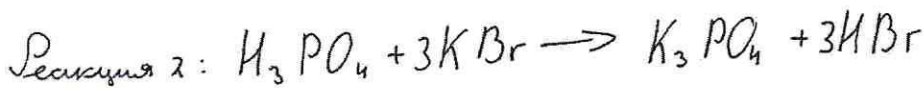
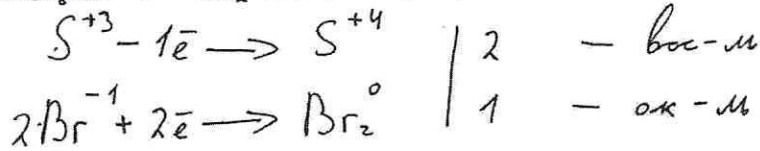
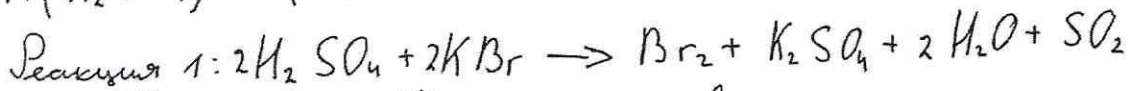
СЕЧЕНОВСКИЙ
УНИВЕРСИТЕТ

8 X 06 7

Задача 4.1.



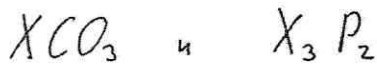
$M(H_2SO_4) = M(H_3PO_4) = 98 \text{ г/моль}$



10

+

(+)



Задача 6.1

Пусть $M(X) = x, \Rightarrow M(XCO_3) = x + 60, \text{ а } M(X_3P_2) = 3x + 62$

$\frac{M(X_3P_2)}{M(XCO_3)} = 1,5952$

$\frac{3x + 62}{x + 60} = 1,5952$

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

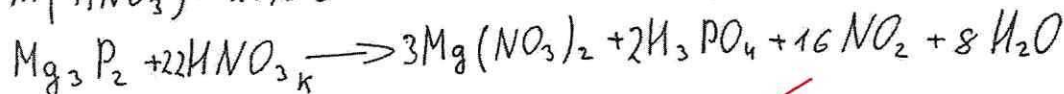
$1,4048x = 33,712$

$x = 24 \Rightarrow Mg; MgCO_3; Mg_3P_2$

$M(MgCO_3) = 84 \text{ г/моль}$

$M(Mg_3P_2) = 134 \text{ г/моль}$

$m(HNO_3) = 26,82$



$\nu(HNO_3) = \frac{26,82}{63 \text{ г/моль}} = 0,425 \text{ моль}$

$\nu(NO_2) = 0,309 \text{ моль}$

$m(NO_2) = 46 \cdot 0,309 = 14,2142$

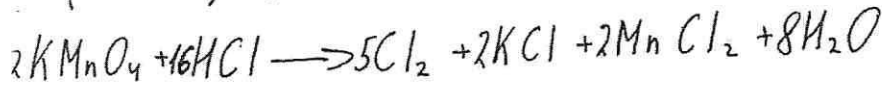
85



Задача 8.1.

$$m(\text{смеси}) = 6,2$$

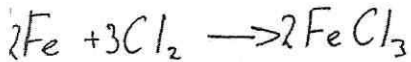
$$m(\text{KMnO}_4) = 6,322$$



$$\nu(\text{KMnO}_4) = \frac{6,322}{158 \text{ г/моль}} = 0,04 \text{ моль}$$

$$\nu(\text{Cl}_2) = 0,1 \text{ моль}$$

$$m(\text{Cl}_2) = 0,1 \text{ моль} \cdot 71 \text{ г/моль} = 7,1 \text{ г}$$



Пусть $\nu(\text{Fe}) = x$, а $\nu(\text{Cu}) = y$, тогда $\nu(\text{Cl}_2)_{\text{из 1 р}} = 1,5x$, $\nu(\text{Cl}_2)_{\text{из 2 р}} = y$

$$64y + 56x = 6$$

$$y + 1,5x = 0,1$$

$$y = 0,1 - 1,5x$$

$$64(0,1 - 1,5x) + 56x = 6$$

$$6,4 - 96x + 56x = 6$$

$$40x = 0,4$$

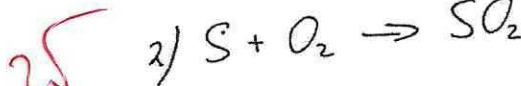
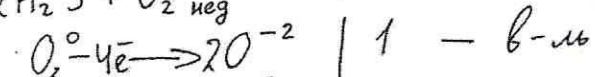
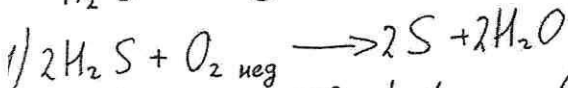
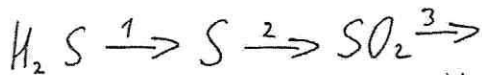
$$x = 0,01 \text{ моль}$$

$$y = 0,1 - 0,015 = 0,085 \text{ моль}$$

$$m(\text{Cu}) = M \cdot \nu = 64 \cdot 0,085 = 5,44 \text{ г}$$

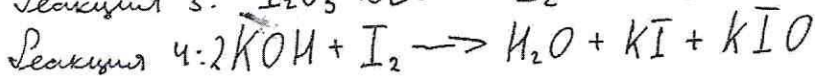
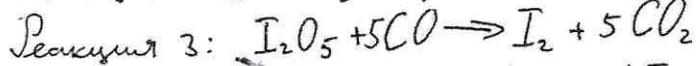
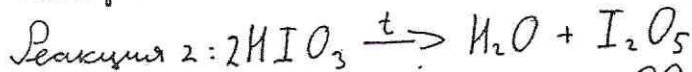
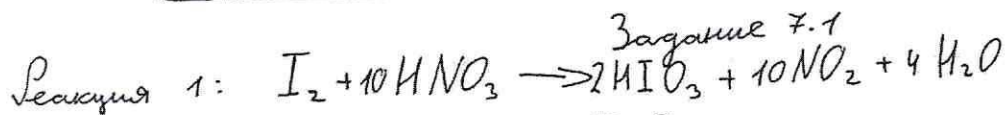
$$\omega(\text{Cu}) = \frac{5,44}{6} \cdot 100\% = 90,67\%$$

Задача 5.1.



СЕЧЕНОВСКИЙ
УНИВЕРСИТЕТ

8 X 0 6 7



$\nu(I_2) = \frac{1,27}{254} = 0,005 \text{ моль}$

$\nu(HIO_3) = 0,01 \text{ моль}$

$\nu(I_2O_5) = 0,005 \text{ моль}$

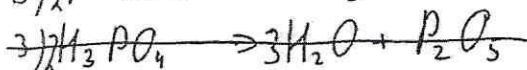
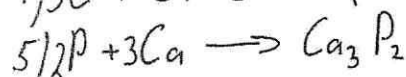
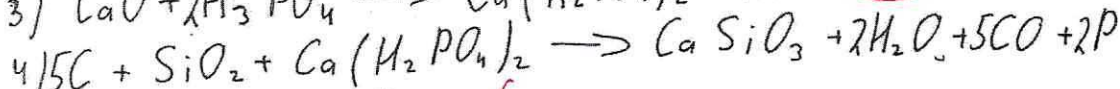
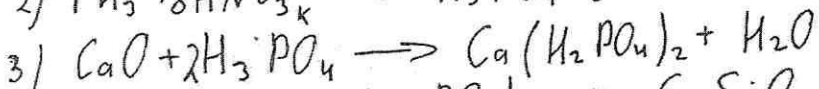
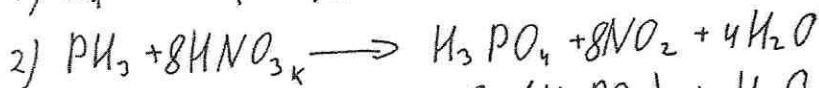
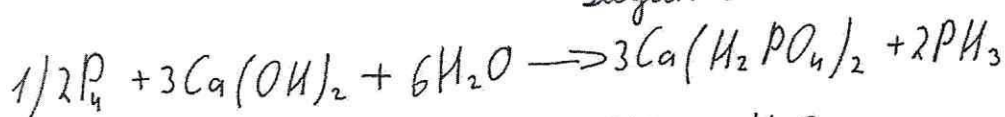
$\nu(I_2) = 0,005 \text{ моль}$

$\nu(KI) = \nu(KIO) = 0,005 \text{ моль}$

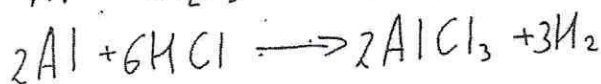
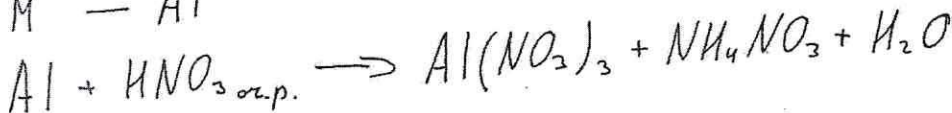
$m(KI) = 0,005 \cdot 166 = 0,832$

$m(KIO) = 0,005 \cdot 182 = 0,912$

Задание 9.1



Задание 10.1



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