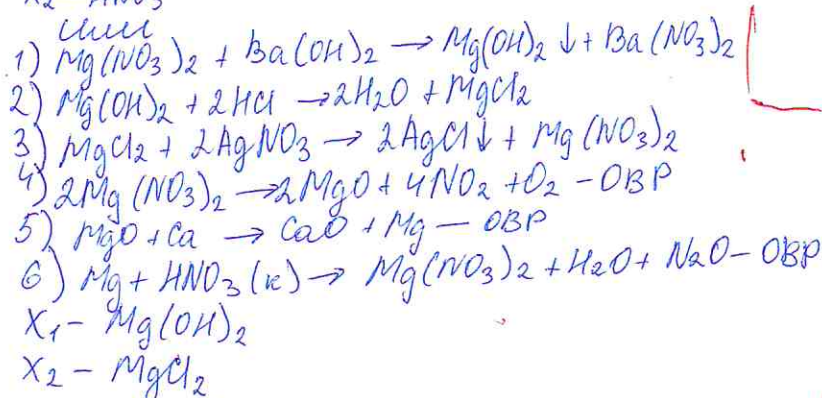


1-3 ✓
 2 15 м ✓
 3 95 ✓
 4 65 м ✓
 5 - 5 844. 10 ✓



10.4. Дано:
 $m(\text{в-ва}) = 0,45 \text{ г}$
 $V(\text{CO}_2) = 0,448 \text{ л}$
 $m(\text{H}_2\text{O}) = 0,63 \text{ г}$
 $V(\text{N}_2) = 0,112 \text{ л}$
 $\rho = 1,607 \text{ г/л}$
 гр-на - ?

Решение:
 $\rho = \frac{m(\text{в-ва})}{V(\text{в-ва})} \cdot \frac{M(\text{в-ва})}{M(\text{N}_2)}$; $M(\text{в-ва}) = \rho \cdot M(\text{N}_2) = 1,607 \cdot 28 \approx 45 \text{ г/моль} + 15$
 $\nu_{\text{CO}_2} = \frac{V}{V_m} = \frac{0,448}{22,4} = 0,02 \text{ моль} + 10$
 $\nu_{\text{C}} = \nu_{\text{CO}_2} = 0,02 \text{ моль}$
 $\nu_{\text{H}_2\text{O}} = \frac{0,63}{18} = 0,035 \text{ моль}$
 $\nu_{\text{H}} = 2\nu_{\text{H}_2\text{O}} = 2 \cdot 0,035 = 0,07 \text{ моль} + 15$
 $\nu_{\text{N}_2} = 0,005 \text{ моль}$
 $\nu_{\text{N}} = 2\nu_{\text{N}_2} = 0,01 \text{ моль} + 15$

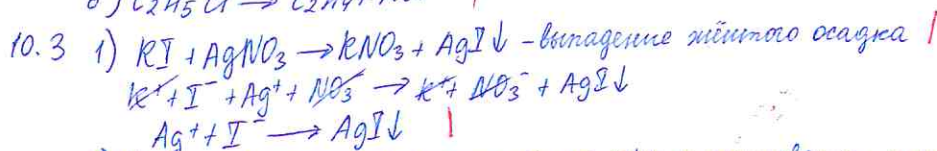
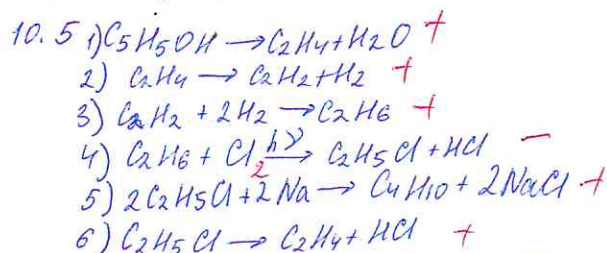
$\frac{\nu(\text{C})}{\nu(\text{H})} = \frac{\nu(\text{C})}{\nu(\text{H})} = \text{C}_2\text{H}_7\text{N}$ - прост. гр-на

$M(\text{прост}) = 2 \cdot 12 + 1 \cdot 7 + 14 = 45 \text{ г/моль}$
 $M(\text{прост}) = M(\text{исх.}) \Rightarrow \text{C}_2\text{H}_7\text{N}$ - искомого гр-на

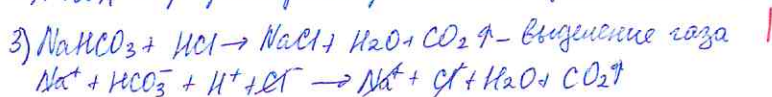
нет $m(\text{O})$ -

$\text{CH}_3 - \text{CH}_2 - \text{NH}_2 + 15$

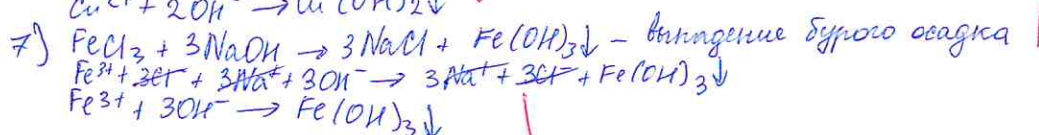
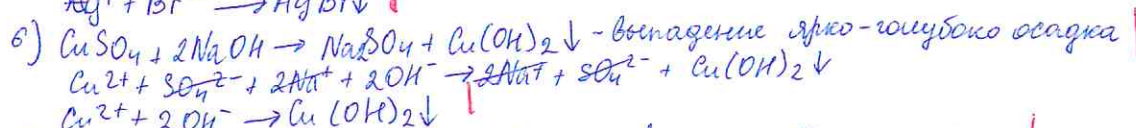
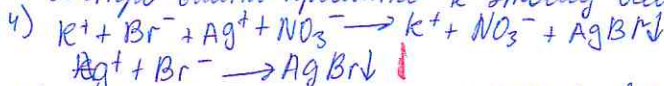
65



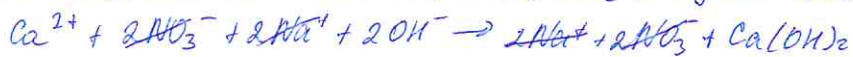
2) NaOH с р-ром фреониталена при смешивании приобретает мажнговый цвет, т.к. щелочная среда



5) $\text{NaNO}_2 + \text{HCl} \rightarrow \text{HNO}_2 + \text{NaCl}$ - р-ция не идет, т.к. не образуется газ осадок или вода, но возможен быстрый переход к этому веществу, то р-р станет красным (HNO_2 - к-т)

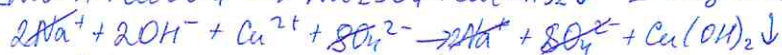


о) $\text{Ca}(\text{NO}_3)_2 + 2\text{NaOH} \rightarrow 2\text{NaNO}_3 + \text{Ca}(\text{OH})_2$ — известковая вода

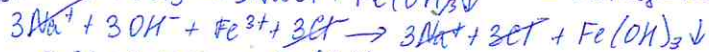


Возможные р-ции между определенными ионами в-вами!

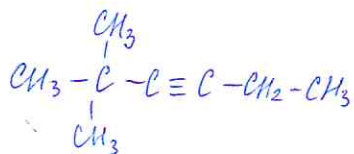
1) $2\text{NaOH} + \text{CuSO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{Cu}(\text{OH})_2 \downarrow$ — выделение ярко-голубого осадка



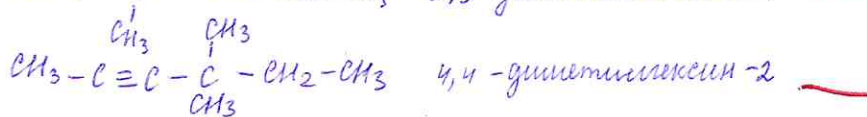
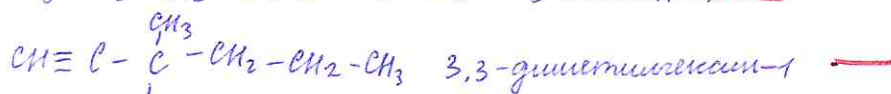
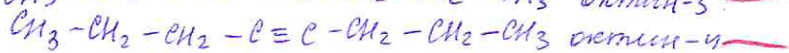
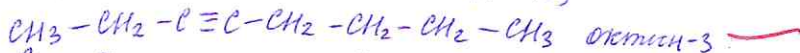
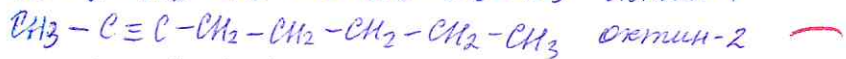
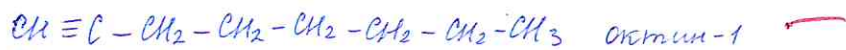
2) $3\text{NaOH} + \text{FeCl}_3 \rightarrow 3\text{NaCl} + \text{Fe}(\text{OH})_3 \downarrow$ — выделение бурого осадка

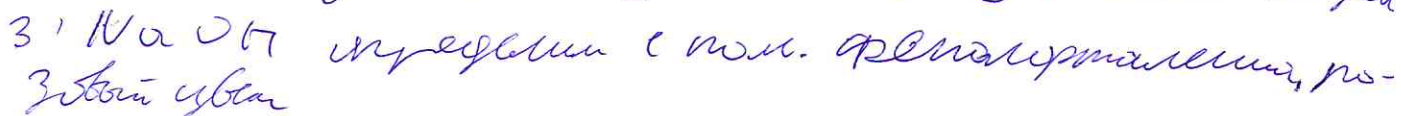
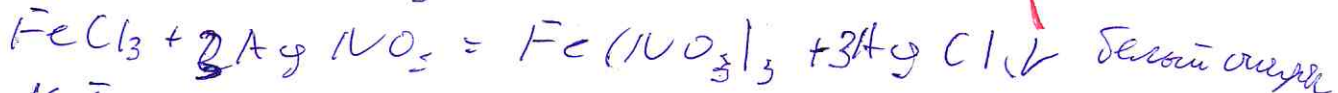
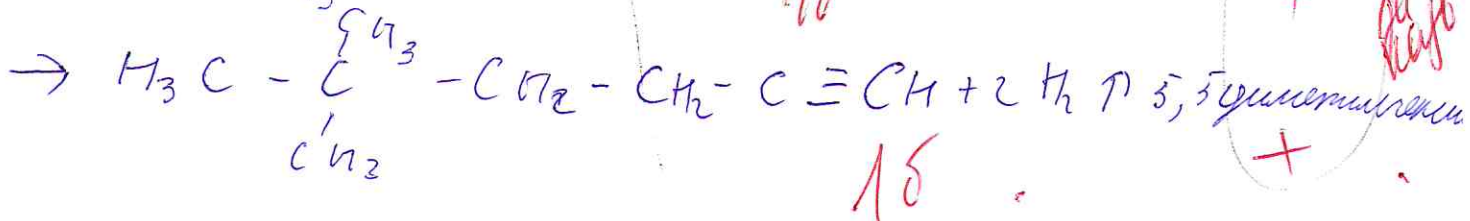
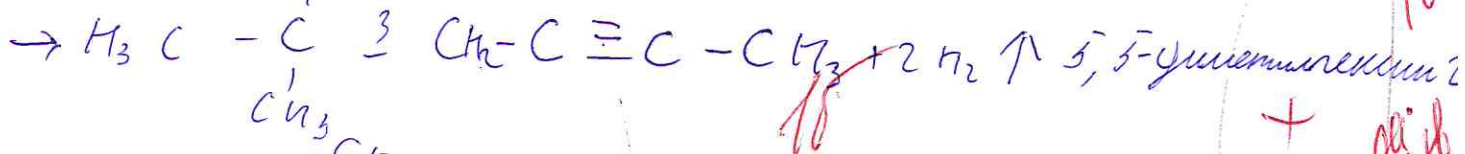
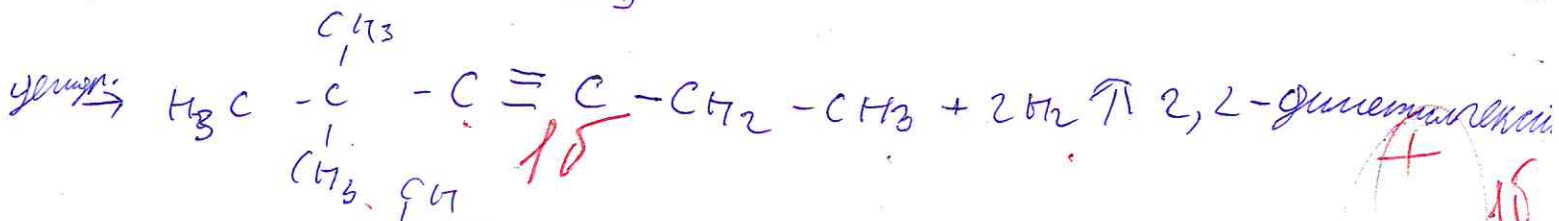
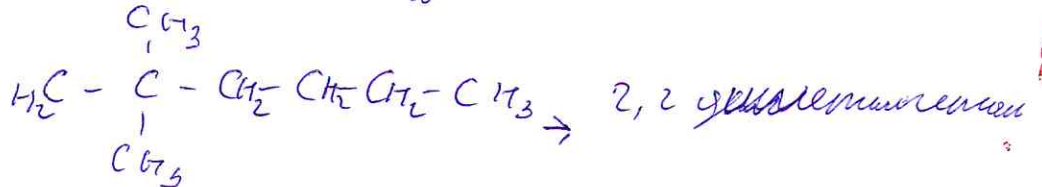
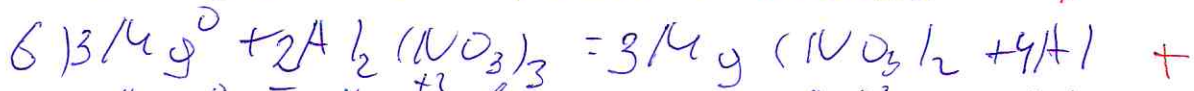
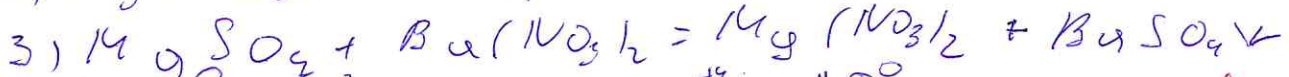
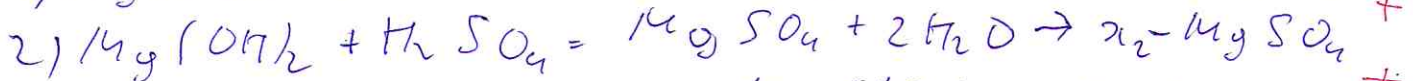
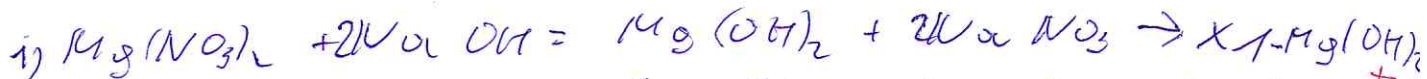
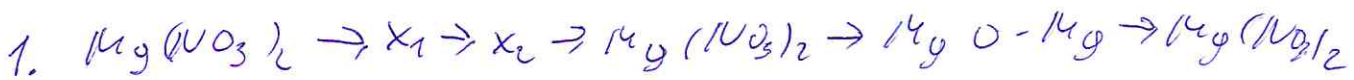


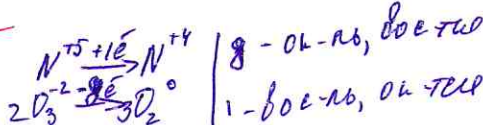
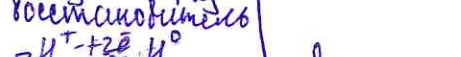
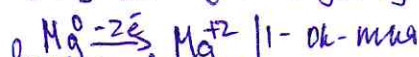
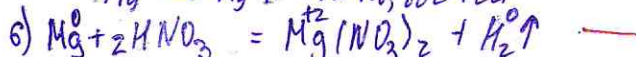
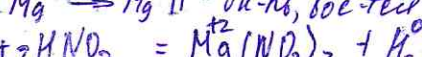
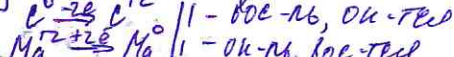
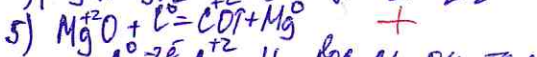
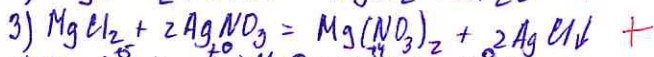
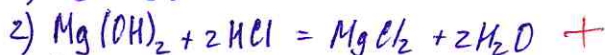
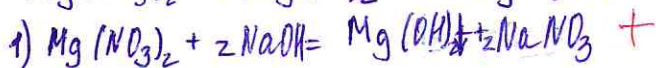
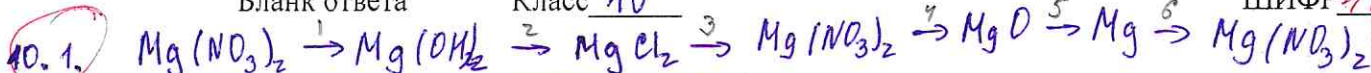
10.2



Дано: $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3 - \text{C} - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3 \\ | \\ \text{CH}_3 \end{array}$
~~2,2-диметилпентан-3~~







1-7
2-8
3-4
4-5
5-6

лет 1-2, m(0)

10.2.

Дано:
 $m(C_2H_5N_3) = 0,452$
 $V(CO_2) = 0,448 л$
 $m(H_2O) = 0,632$
 $V(N) = 0,112 л$
 $D(N_2) = 1,607$

$C_2H_5N_3$?

Решение:

1) $M(бен) = M(N_2) \cdot D$; $M = 28 \cdot 1,607 = 45 \text{ г/моль}$

2) $n(CO_2) = \frac{V}{V_m}$; $n = \frac{0,448}{22,4 \text{ л/моль}} = 0,02 \text{ моль}$

$n(CO_2) = n(C) = 0,02 \text{ моль}$

3) $n(H_2O) = \frac{m}{M}$; $n = \frac{0,632}{18 \text{ г/моль}} = 0,035 \text{ моль}$

$n(H_2O) = n(H) = 0,07 \text{ моль}$

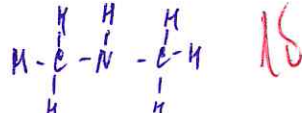
4) $n(N) = \frac{V}{V_m}$; $n = \frac{0,112}{22,4 \text{ л/моль}} = 0,005 \text{ моль}$; $n(2N) = 0,01 \text{ моль}$

5) $n(C) : n(H) : n(N)$

$0,02 : 0,07 : 0,01 = 2 : 7 : 1$

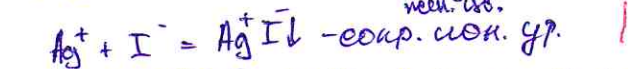
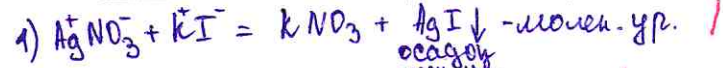
C_2H_7N

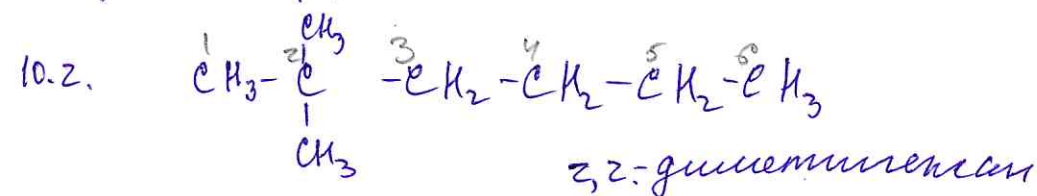
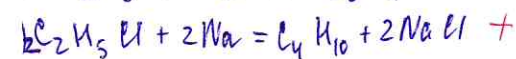
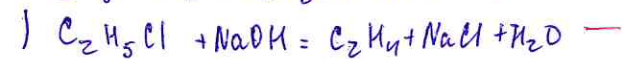
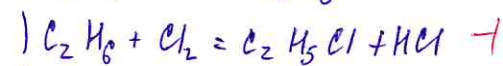
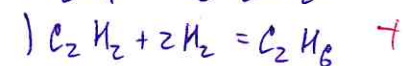
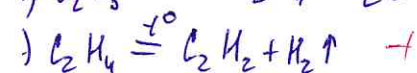
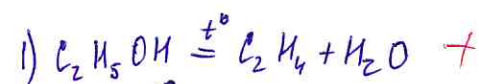
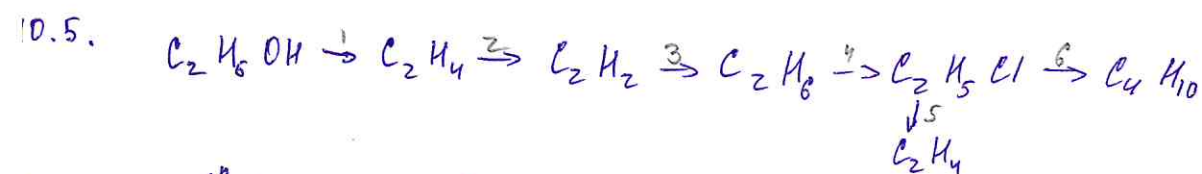
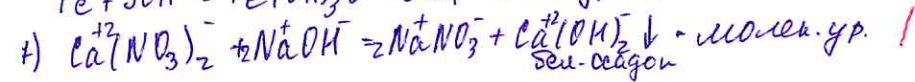
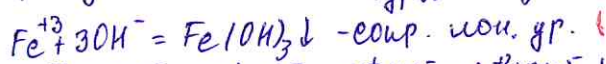
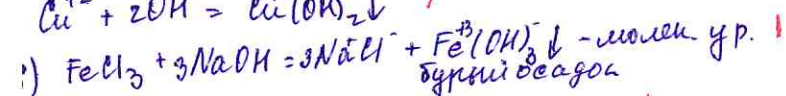
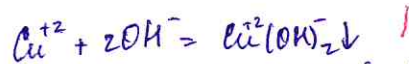
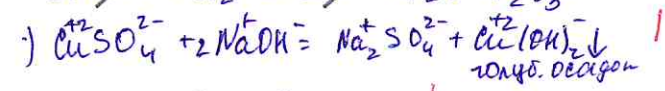
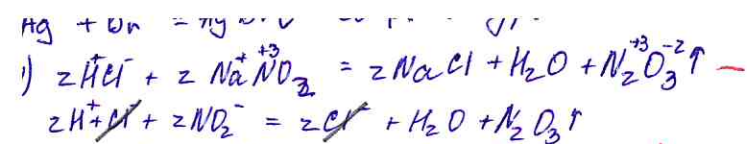
Ответ: C_2H_7N

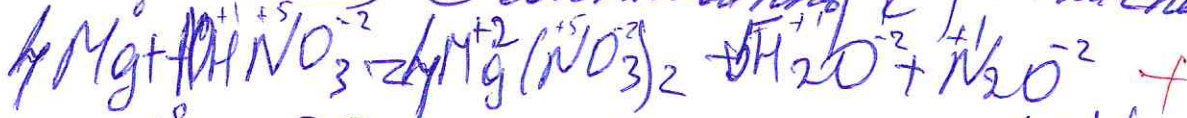
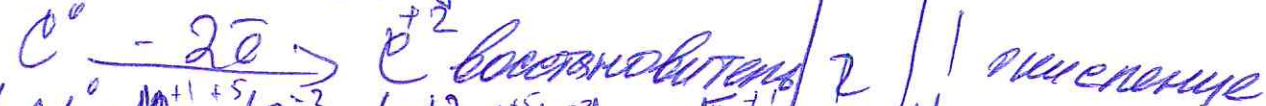
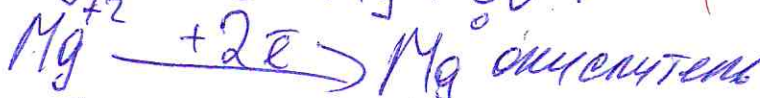
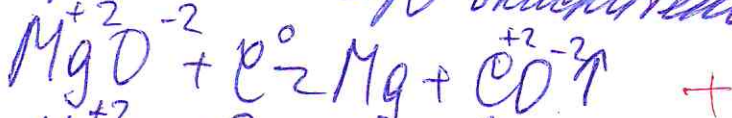
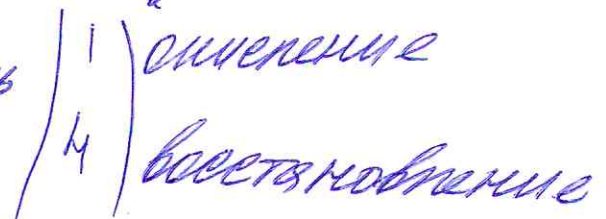
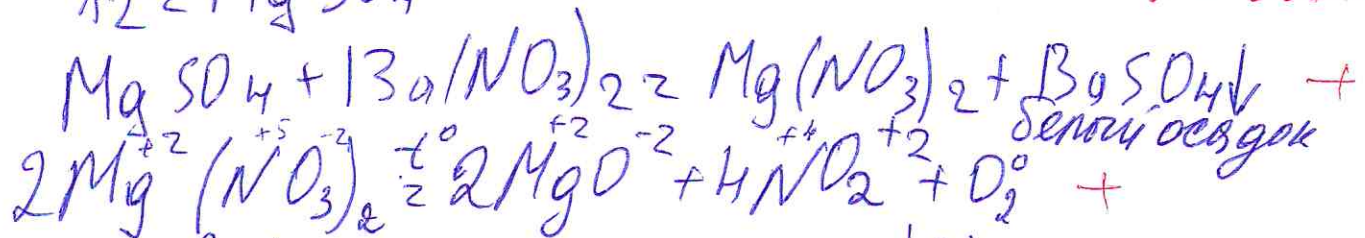
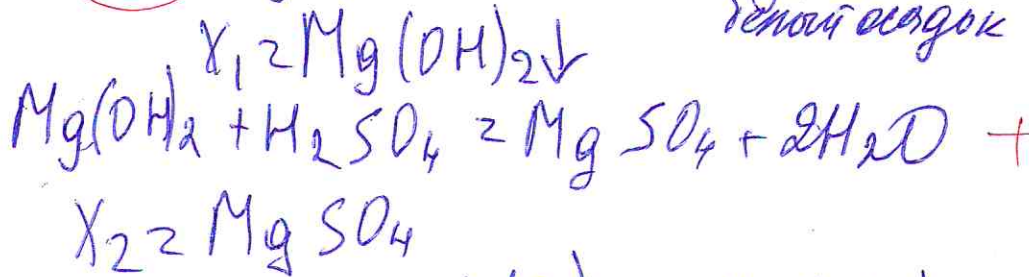
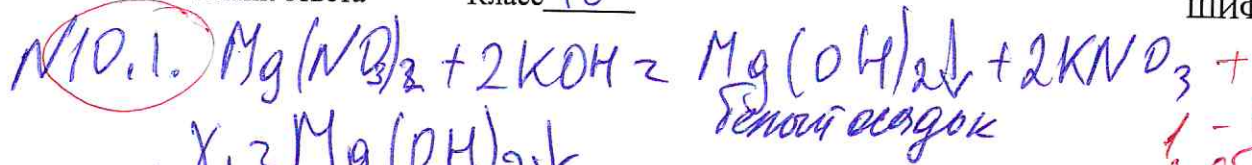


10.3.

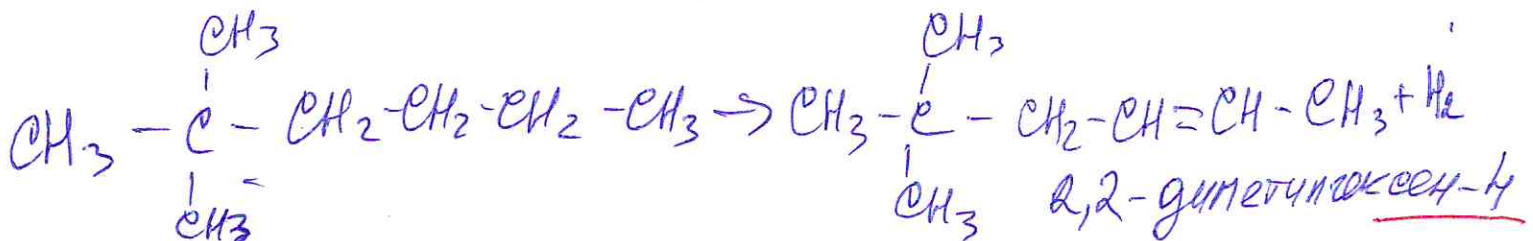
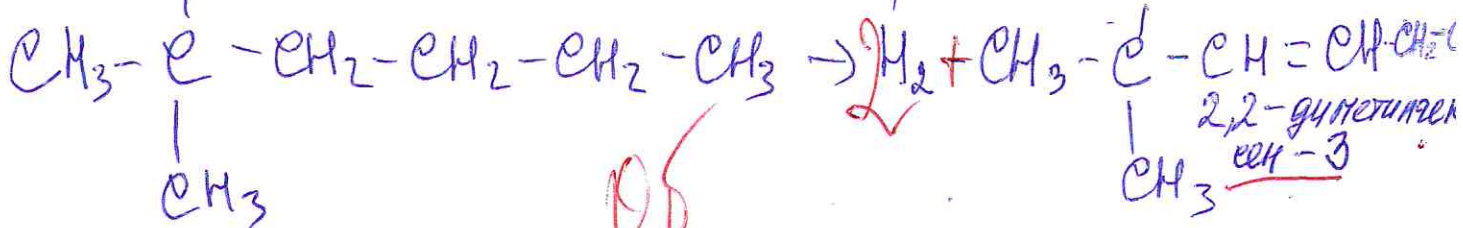
	KI	NaOH	NaHCO ₃	KBr	NaNO ₂	CuSO ₄	FeCl ₃	Ca(NO ₃) ₂
AgNO ₃	+	-	-	+	-	-	+	-
HCl	-	+	+	-	+	-	-	-
NaOH	-	-	-	-	-	+	+	+
лакмус (рр)	-	+	-	-	-	-	-	-
фенон. (силь.рр)	-	+	-	-	-	-	-	-

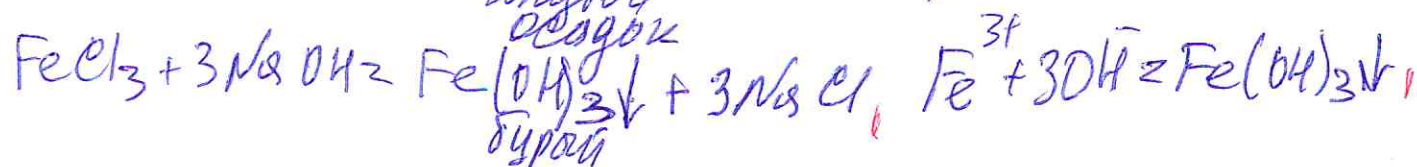
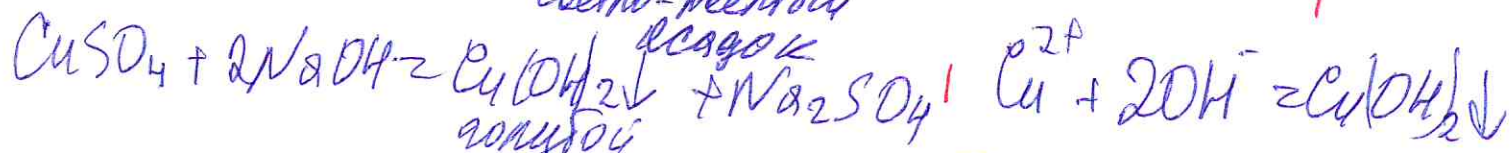
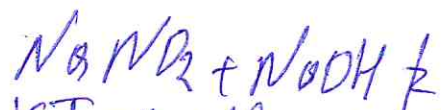
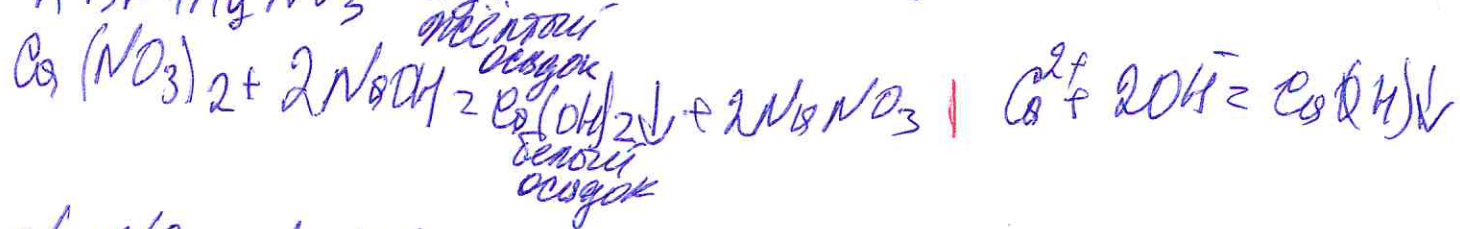
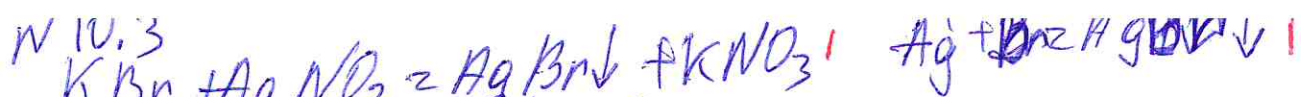




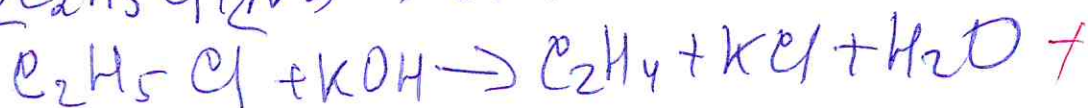
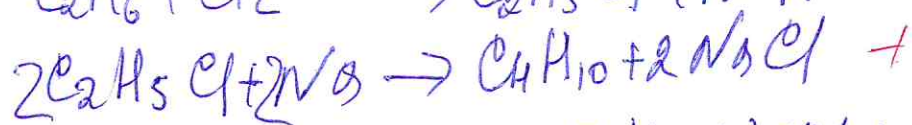
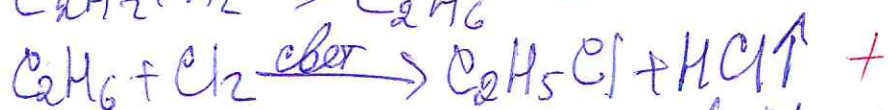
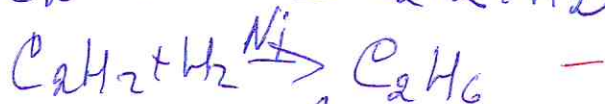
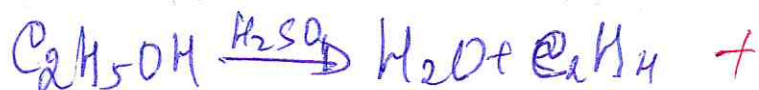


N10.2





N 10.5

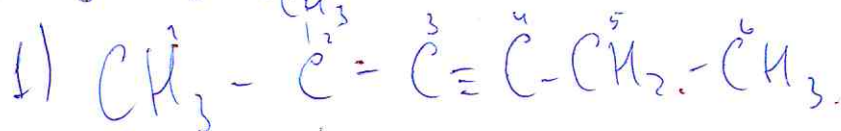


1-4d
2-4m
3-5d
4-7d
5-4d

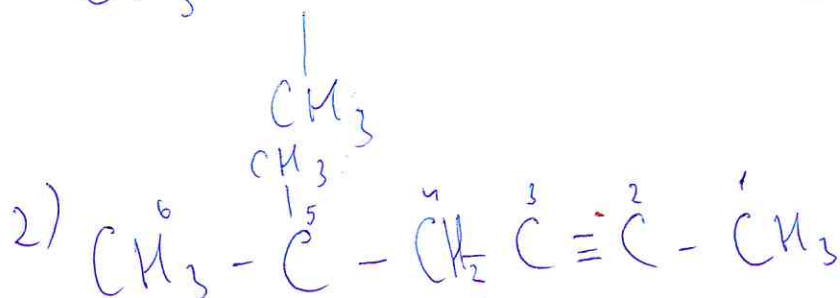
Задача 2



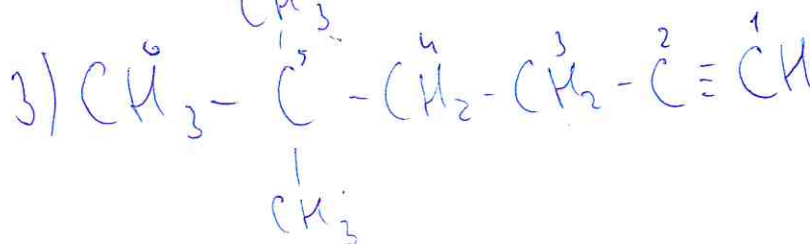
углеводороды:



2,2-гетилгексин-3



5,5-гетилгексин-2



5,5-гетилгексин-1

Задача 4

исх. гр-д

Дано:

$$m(C_xH_yN_z) = 0,45r$$

$$V(CO_2) = 0,448r$$

$$m(H_2O) = 0,63r$$

$$V(N_2) = 0,112r$$

$$D_{m_2} = 1,607$$

$$C_xH_yN_z - ?$$

Решение:

$$M(C_xH_yN_z) = D_{m_2} \cdot M(N_2) = 1,607 \cdot 28 \approx 45 \text{ Ед.м.} + 10$$

$$C \rightarrow CO_2 \quad n(CO_2) = \frac{V(CO_2)}{V_m} = \frac{0,448}{22,4} = 0,02 \text{ моль} \Rightarrow n(C) = n(CO_2) = 0,02 \text{ моль} + 10$$

$$2H \rightarrow H_2O \quad n(H_2O) = \frac{m(H_2O)}{M(H_2O)} = \frac{0,63}{18} = 0,035 \text{ моль} \Rightarrow n(H) = 2n(H_2O) = 0,07 \text{ моль} + 10$$

$$n(N_2) = \frac{V(N_2)}{V_m} = \frac{0,112}{22,4} = 0,005 \text{ моль} \Rightarrow n(N) = 2n(N_2) = 0,01 \text{ моль} + 10$$

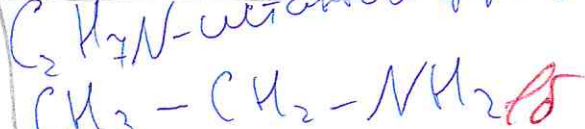
$$x:y:z = n(C):n(H):n(N) = 0,02:0,07:0,01 = 2:7:1 \Rightarrow$$

$$\Rightarrow C_2H_7N - \text{пр. ф-ла}$$

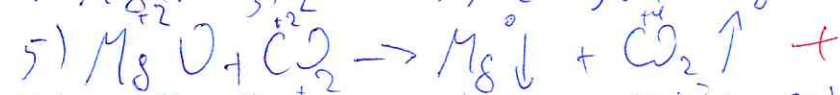
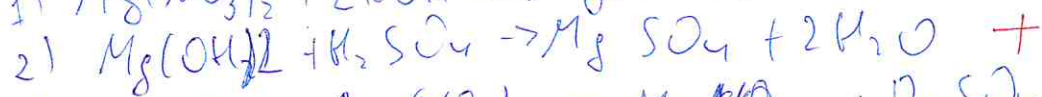
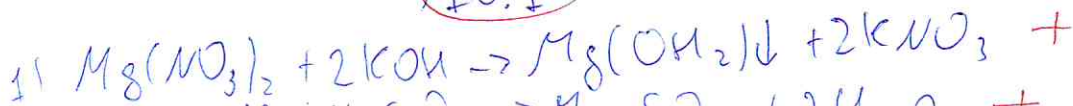
$$\frac{M(C_2H_7N)}{M(C_2H_7N)} = \frac{45}{45} \Rightarrow$$

$$C_2H_7N$$

Ответ:

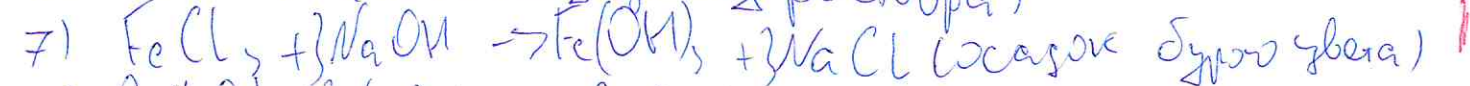
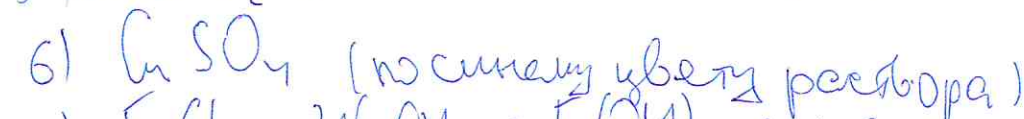
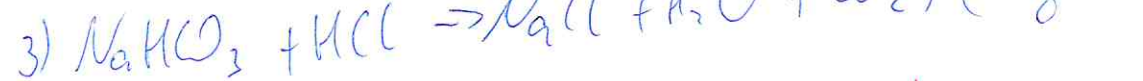
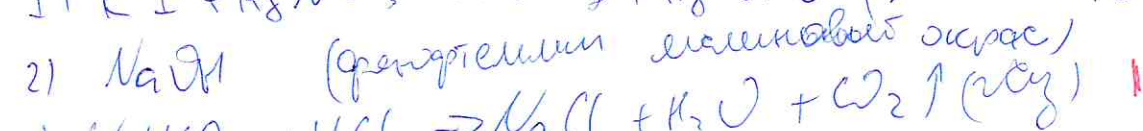
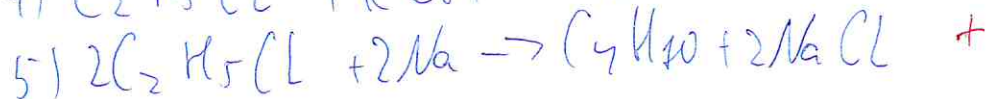
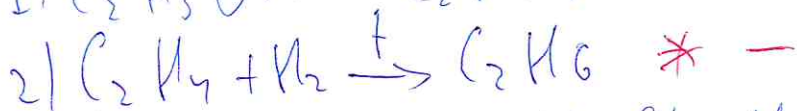
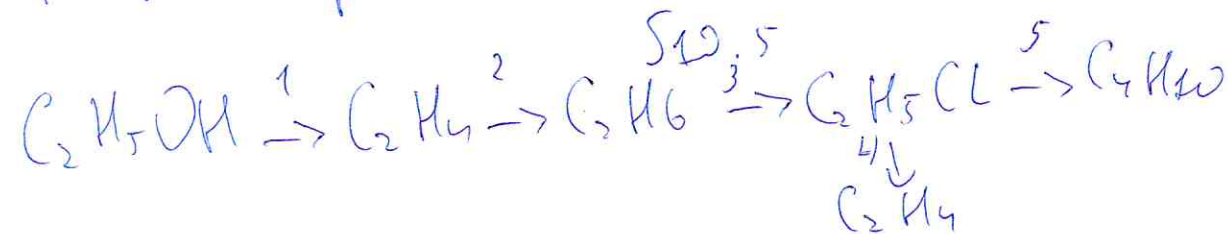


10.1



I. X₁ - Mg(OH)₂ X₂ - MgSO₄

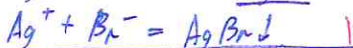
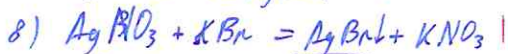
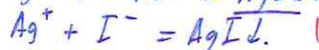
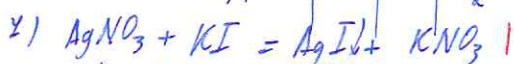
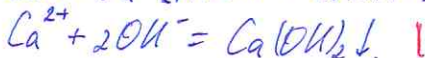
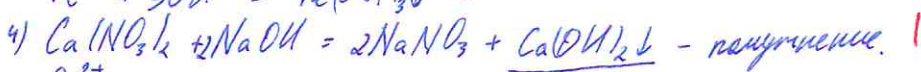
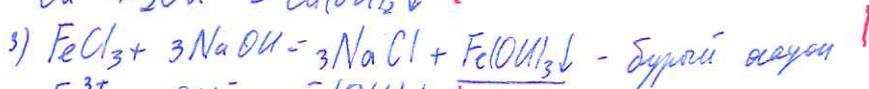
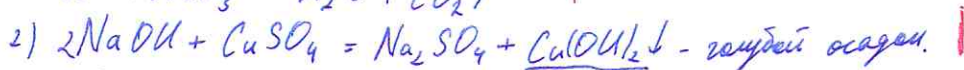
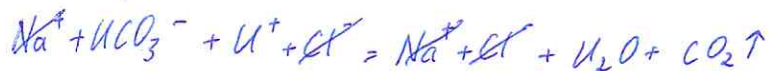
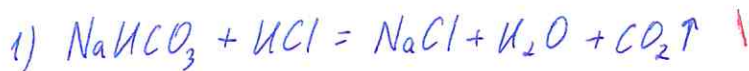
II ОВР по реакции 5 и 6



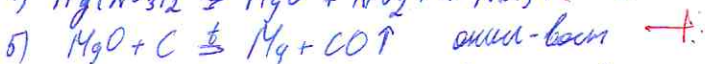
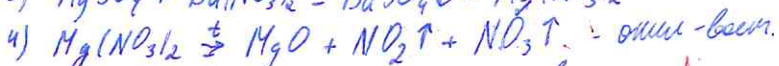
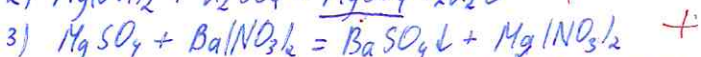
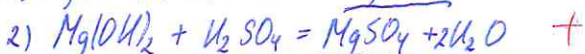
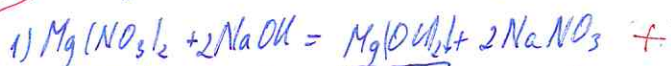
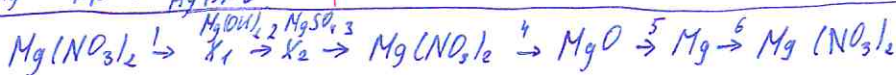
1 - 5
2 05
3 98
4 8
5 58
ШИФР 10-10

10.3

	KI	NaOH	NaHCO ₃	KBr	NaNO ₂	CuSO ₄	FeCl ₃	Ca(NO ₃) ₂
AgNO ₃	AgI↓ желтый			AgBr↓ темно-серый				
HCl			CO ₂ ↑		NO ₂ ↑ бурый газ			
NaOH						Cu(OH) ₂ ↓ голуб. ос.	Fe(OH) ₃ ↓ бурый ос.	Ca(OH) ₂ ↓ мутноватое.
лакмус		синий						
фенилфр.								



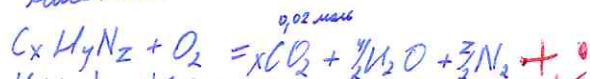
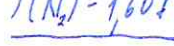
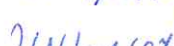
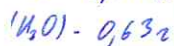
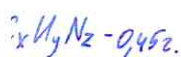
10.1



10.4

Дано:

Решение:



$J(\text{CO}_2) = J(\text{C}) = \frac{0,448}{22,4} = 0,02 \text{ моль}$

$J(\text{H}) = 2J(\text{H}_2\text{O}) = 2 \cdot \frac{0,632}{22,4} = 0,056 \text{ моль}$

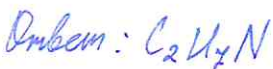
$J(\text{N}) = 2J(\text{N}_2) = 2 \cdot \frac{0,112}{28} = 0,008 \text{ моль}$

$m(\text{C}) + m(\text{H}) + m(\text{N}) = 0,02 \cdot 12 + 0,056 \cdot 1 + 0,008 \cdot 14 = 0,24 + 0,056 + 0,112 = 0,408$

$\text{C}:\text{H}:\text{N} = 0,02:0,056:0,008 = 2:5,6:1 = 2:5,6:1$

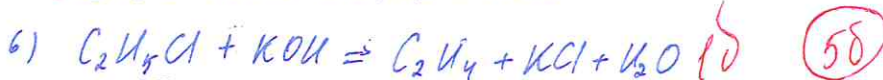
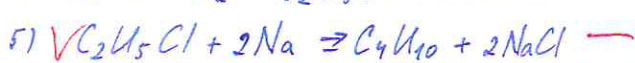
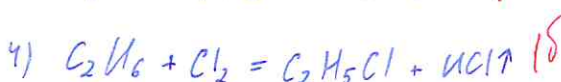
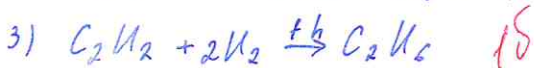
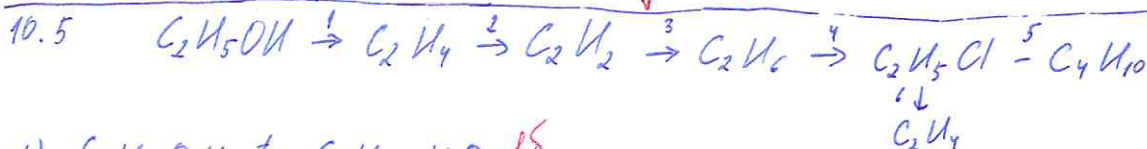
$\text{C}_2\text{H}_5\text{N} \quad M_r = 45$

$M(\text{C}_x\text{H}_y\text{N}_z) = D(\text{N}_2) \cdot M(\text{N}_2) = 1,608 \cdot 28 = 45 \text{ г/моль}$



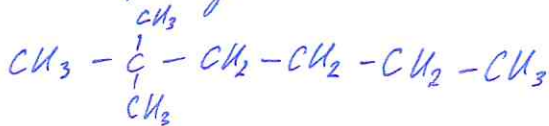
кет. сп. ф-н.

(85)

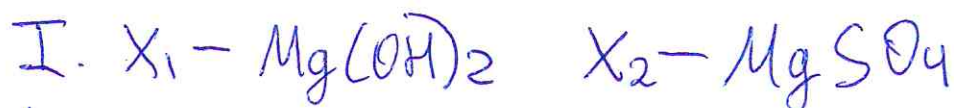
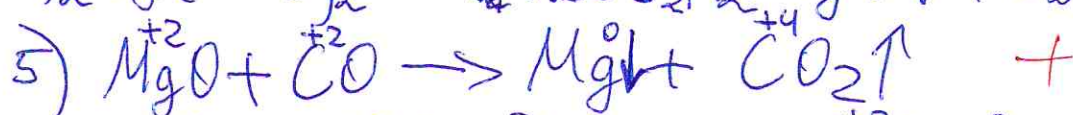
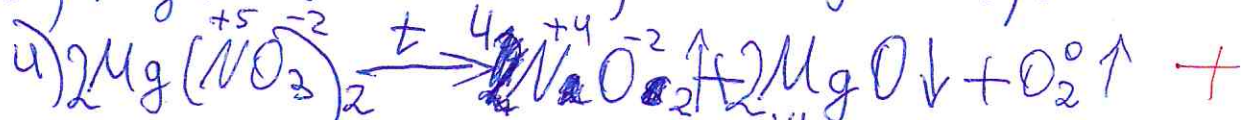
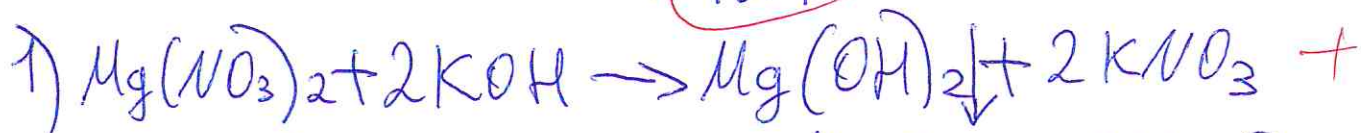


(58)

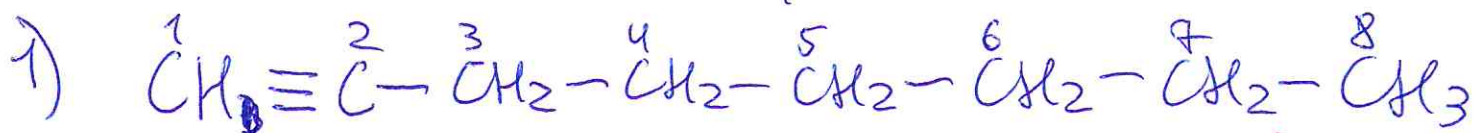
10.2 2,2 - диметилпентан



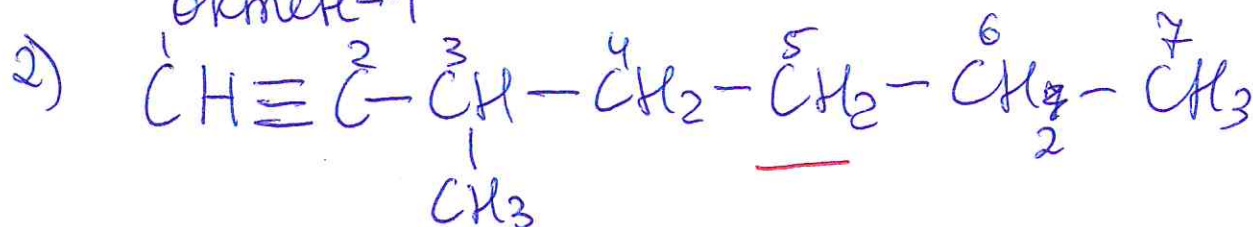
С8

10.1

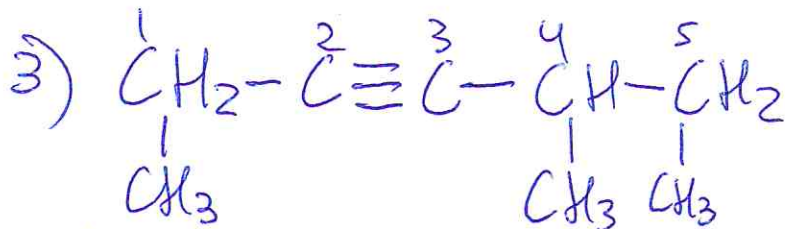
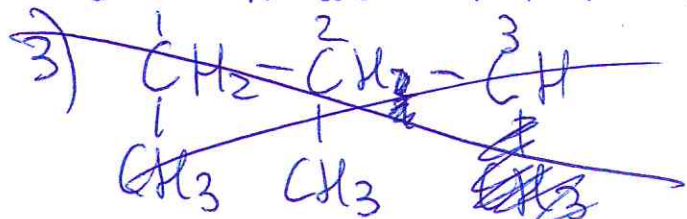
II. OBR - это реакции ~~N 5, 6, 4~~
N 10.2



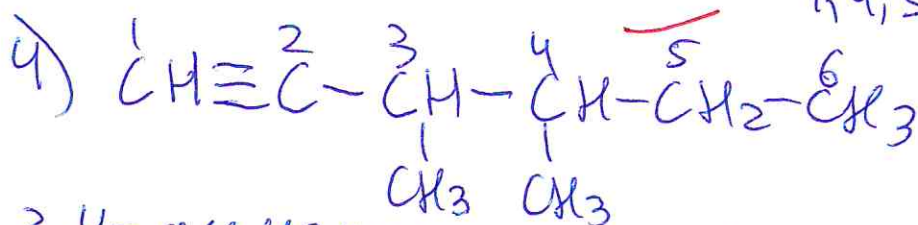
октен-1



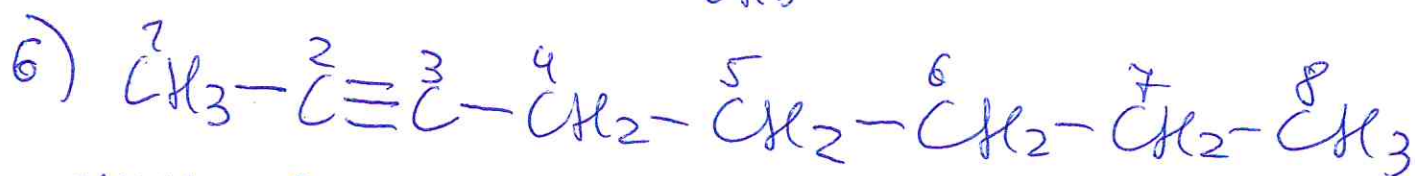
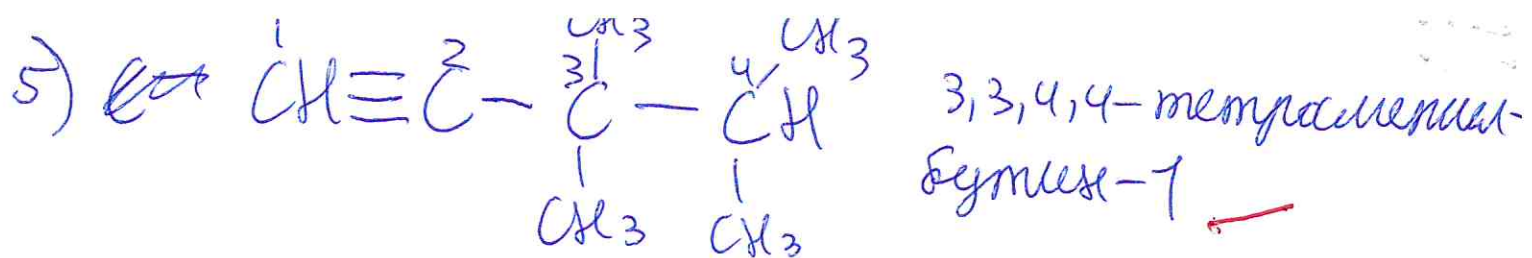
3-метил-октен-1



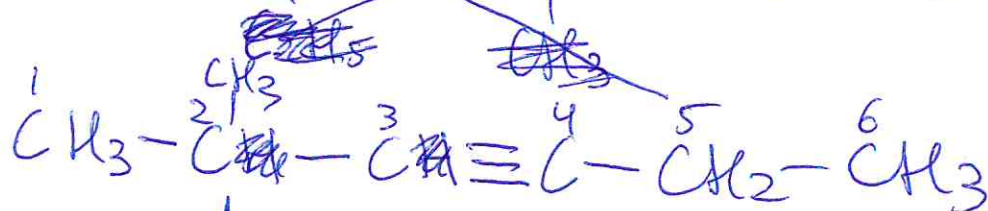
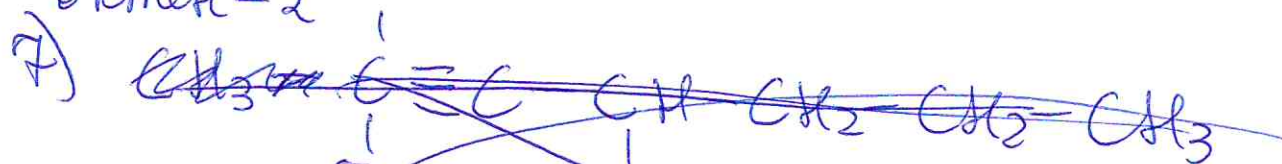
1,4,5-триметилпентен-2



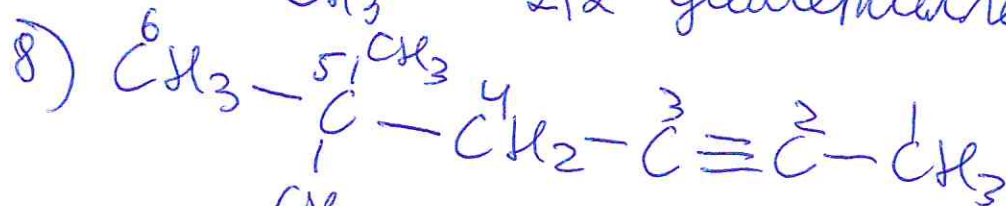
3,4-диметилпентен-1



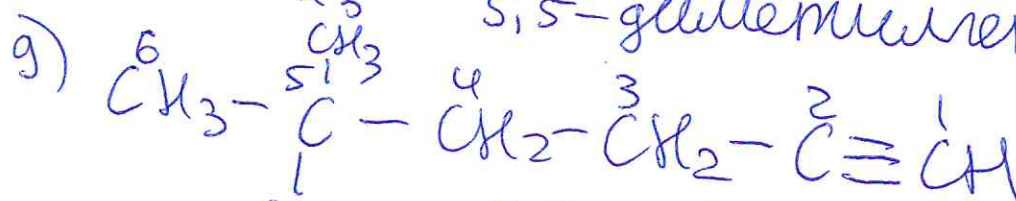
октан-2



2,2-диметилпентин-3

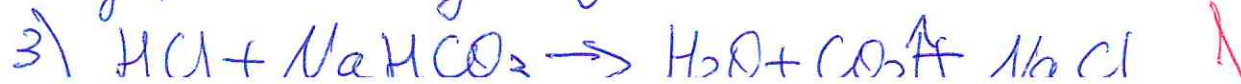
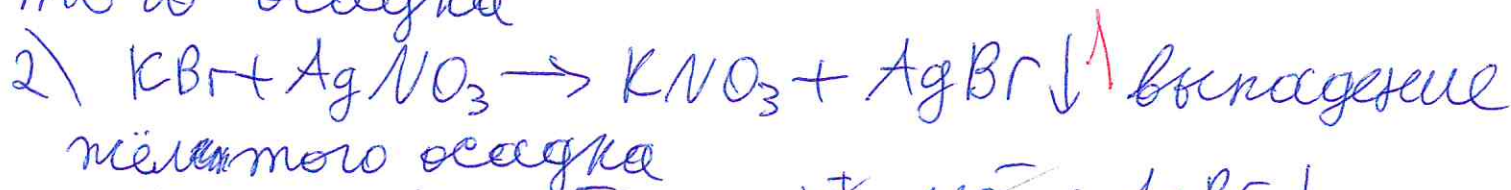
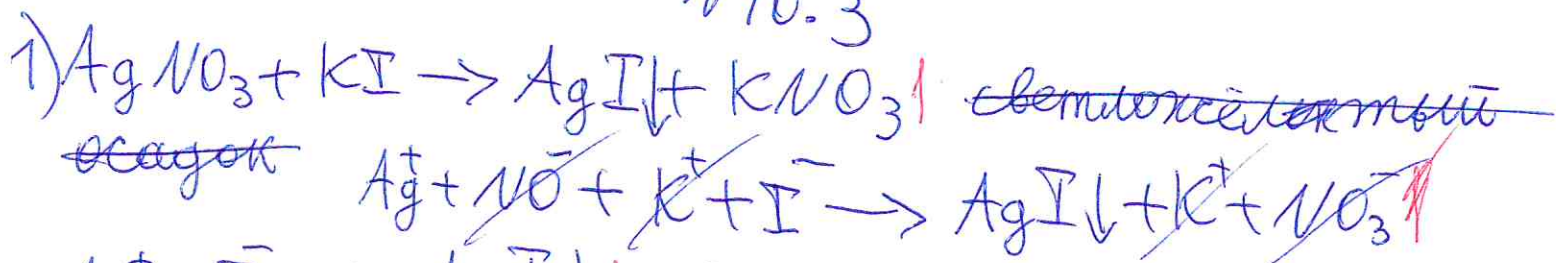


5,5-диметилпентин-2



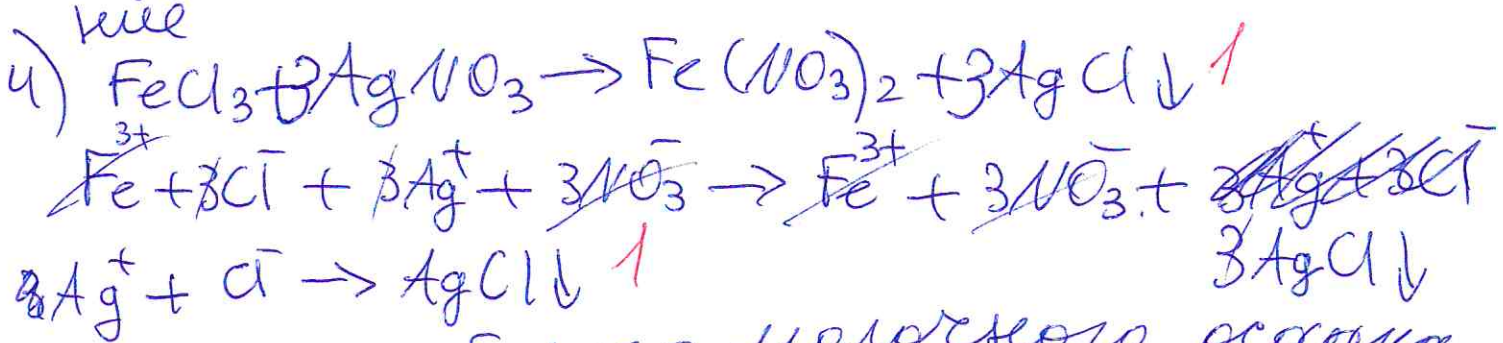
5,5-диметилпентин-1

№10.3

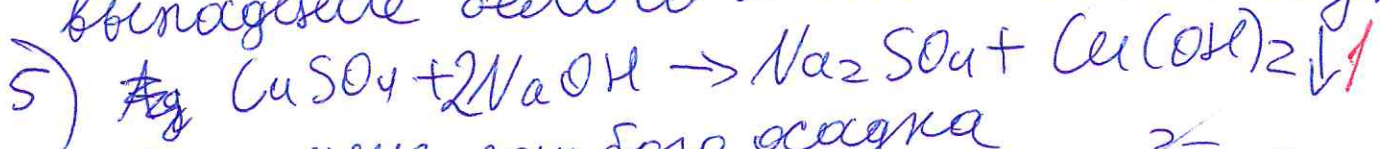




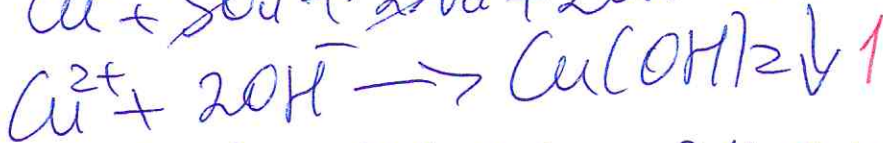
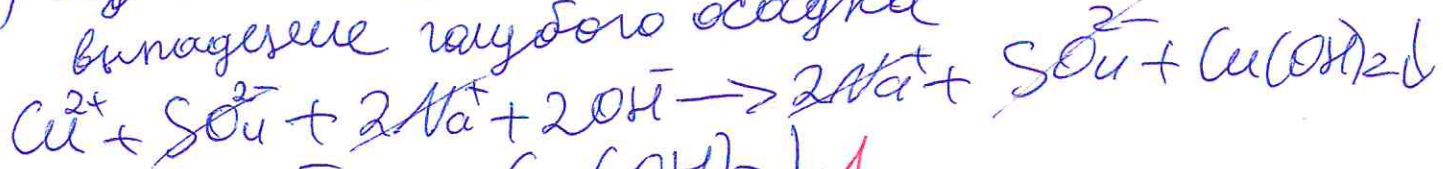
выделение газа, не поддерживающего горение



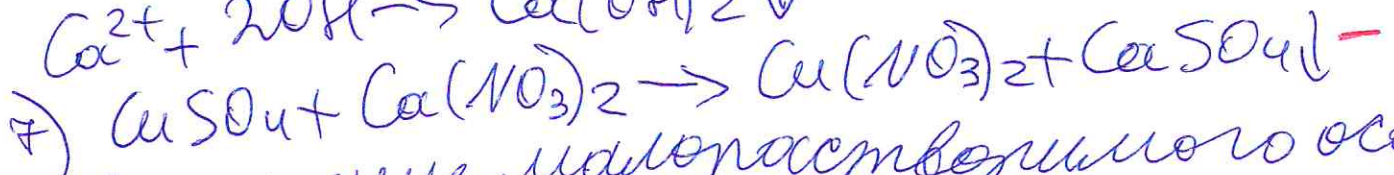
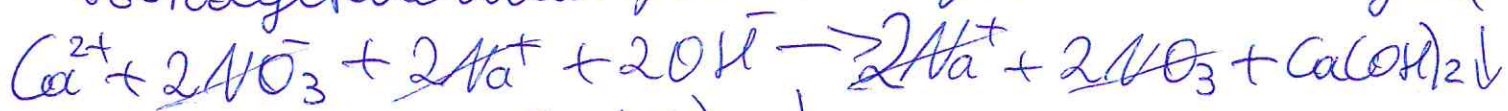
выпадение белого молочного осадка



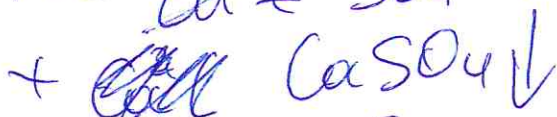
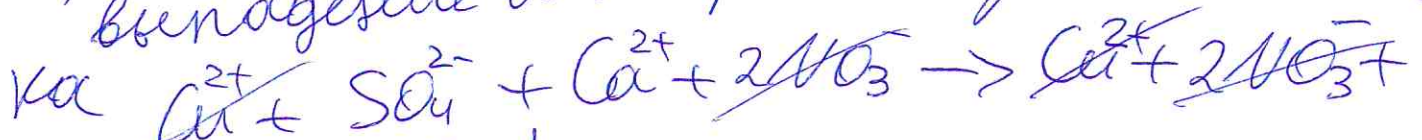
выпадение голубого осадка

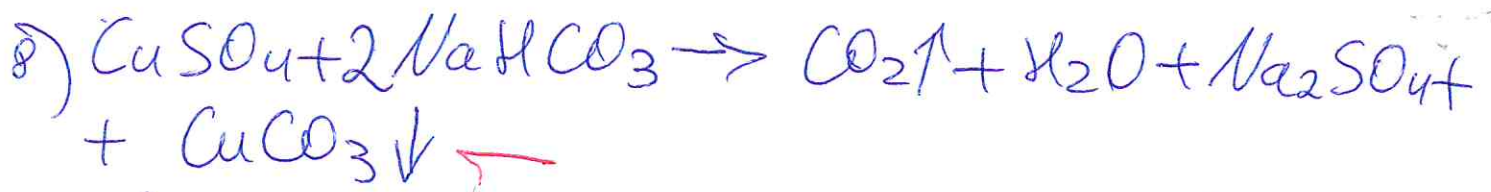


выпадение малорастворимого осадка

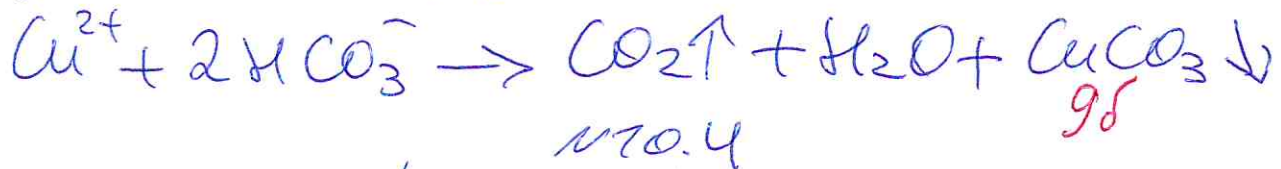
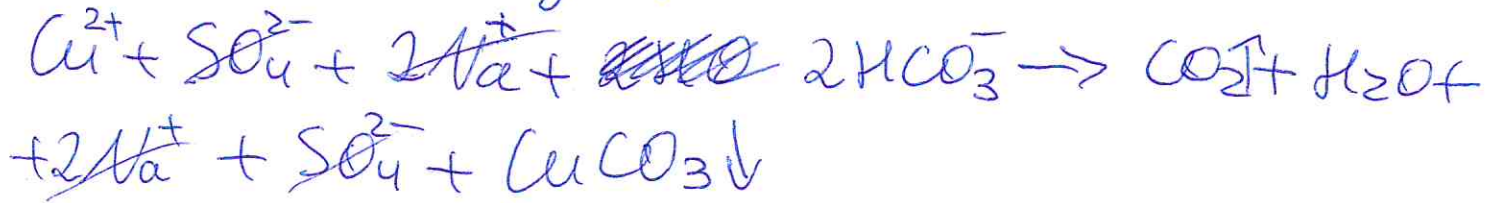


выпадение малорастворимого осадка





выделение газа, не подвергается разложению и осадок



Дано:

$$m(\text{б-ва}) = 0,45 \text{ г}$$

$$V(\text{CO}_2) = 0,448 \text{ л}$$

$$m(\text{H}_2\text{O}) = 0,63 \text{ г}$$

$$V(\text{N}_2) = 0,112 \text{ л}$$

$$D(\text{N}) = 1,607$$

формула-?

Решение

$$M(\text{б-ва}) = M(\text{N}_2) \cdot D(\text{N}_2)$$

$$M(\text{N}_2) = 14 \cdot 2 = 28 \text{ г/моль}$$

$$M(\text{б-ва}) = 28 \cdot 1,607 = 45 \text{ г/моль}$$

$$\nu(\text{CO}_2) = \frac{V}{V_m} = \frac{0,448}{22,4} = 0,02 \text{ моль}$$

в ~~1 моль~~ 1 моль CO_2 1 моль

$$\Rightarrow \nu(\text{CO}_2) = 0,02 \text{ моль}$$

$$\nu(\text{H}_2\text{O}) = \frac{m}{M} = \frac{0,63}{18} = 0,035 \text{ моль}$$

$$M(\text{H}_2\text{O}) = 16 + 2 = 18 \text{ г/моль}$$

в 1 моль H_2O содержится 2 моль H. $\Rightarrow \nu(\text{H}) = 0,035 \cdot 2 = 0,07 \text{ моль}$

$$\nu(\text{N}_2) = \frac{0,112}{22,4} = 0,005 \text{ моль}$$

$$\nu(\text{N}) = 0,005 \cdot 2 = 0,01 \text{ моль}$$

$$m(\text{H}) = M \cdot \nu = 0,07 \cdot 1 = 0,07 \text{ г}$$

$$m(\text{N}) = 14 \cdot 0,01 = 0,14 \text{ г}$$

$$m(\text{C}) = 12 \cdot 0,02 = 0,24 \text{ г}$$

$m(C) + m(H) + m(N) = 0,07 + 0,24 + 0,14 = 0,45 \text{ г} =$
 $= m(\text{в-ва}) \Rightarrow \text{вещество не содержит кислорода.}$ 25 15

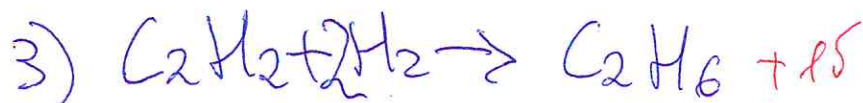
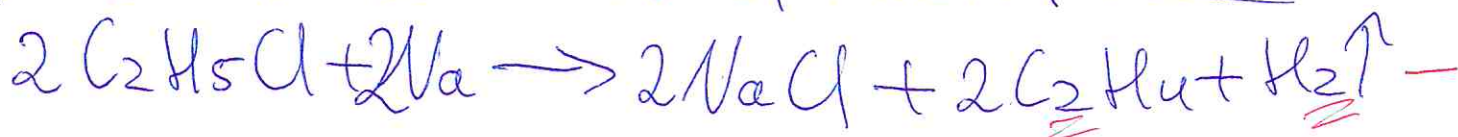
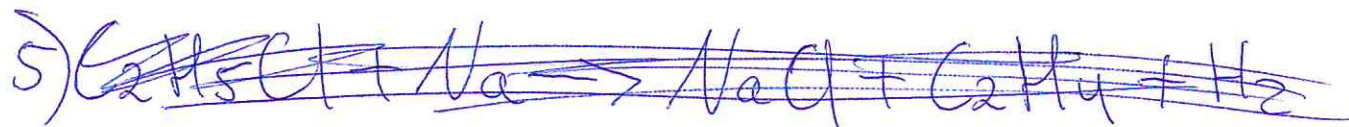
$\nu(C) : \nu(H) : \nu(N) = 2 : 7 : 1 \Rightarrow \text{простейшая}$
 формула C_2H_7N 15

$M(C_2H_7N) = 12 \cdot 2 + 7 + 14 = 45 \frac{\text{г/моль}}{\text{моль}} = M(\text{в-ва}) \Rightarrow C_2H_7N \text{ подходит и является}$
 ответ. (95)



ответ: C_2H_7N

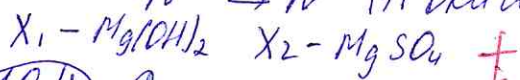
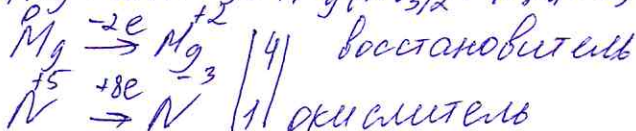
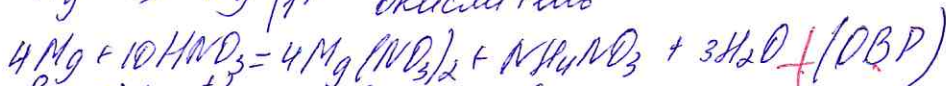
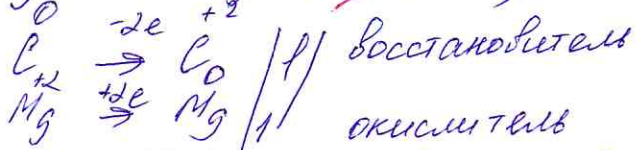
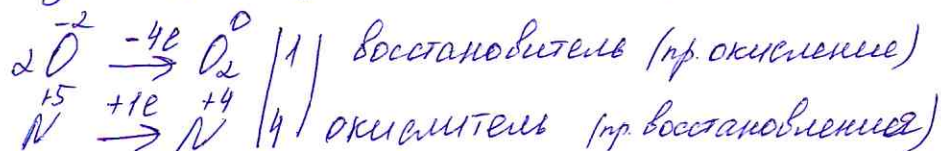
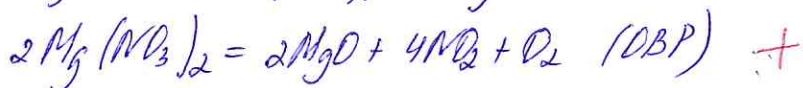
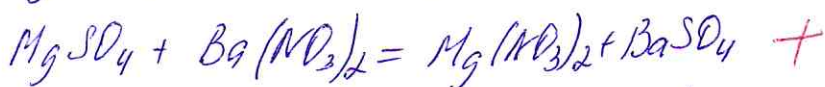
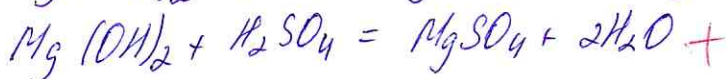
$N 70.5$



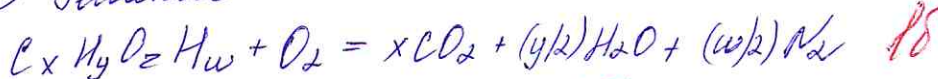
(25)

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- 2 05 my @
- 3 95 ~~sub~~ J
- 4 35 my @
- 5 25 ~~my~~ K

(10.1)



(10.4) Решение



$$M = 1,607 \cdot 28 = 45 \text{ г/моль} \quad 15$$

$$n(\text{C}) = n(\text{CO}_2) = 0,448 / 22,4 = 0,02 \text{ моль} \quad 15$$

$$n(\text{H}) = 2n(\text{H}_2\text{O}) = 2 \cdot \frac{0,63}{18} = 0,07 \text{ моль} \quad 15$$

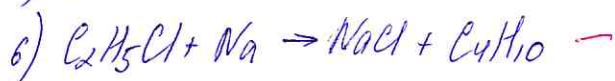
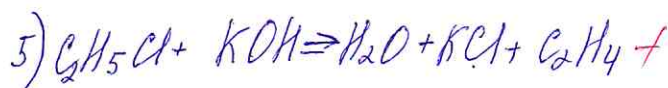
$$n(\text{N}) = 2n(\text{N}_2) = 2 \cdot \frac{0,112}{28,4} = 0,01 \text{ моль} \quad 15$$

т.к. n элементов углерода, H и N $\neq (0,24 + 0,07 + 0,14)$ равна

(0,45) то O_2 в веществе отсутствует 25
 15

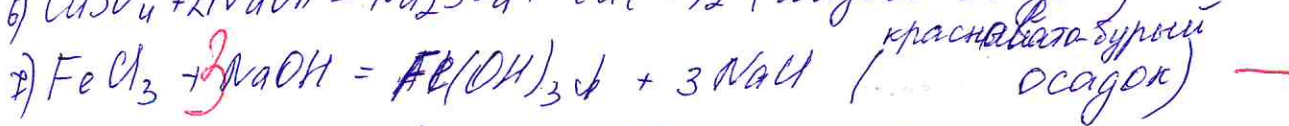
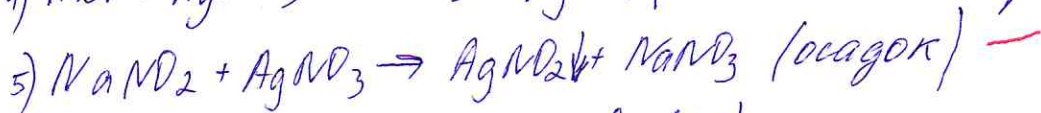
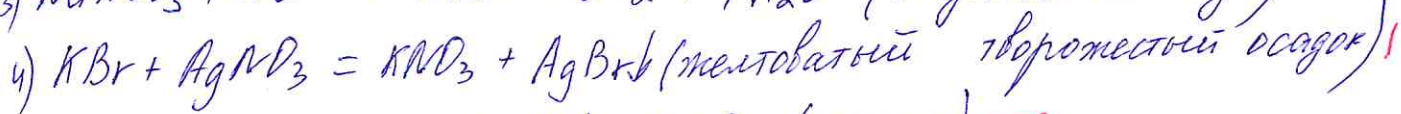
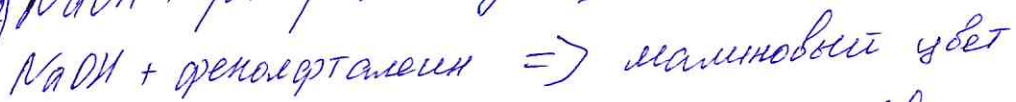
$$n(\text{C}) : n(\text{H}) : n(\text{N}) = 0,02 : 0,07 : 0,01 = 2 : 7 : 1 \Rightarrow$$

формула вещества $\text{C}_2\text{H}_7\text{N}$ 15

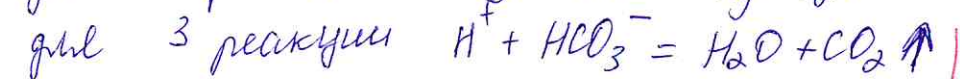
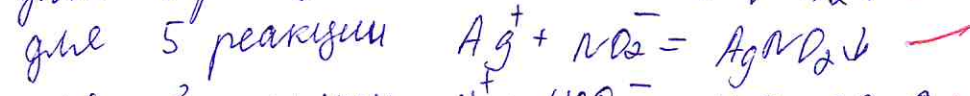
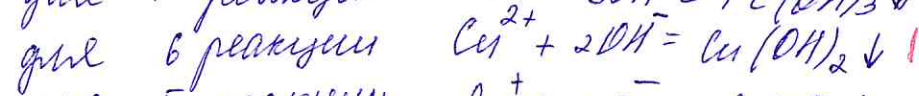
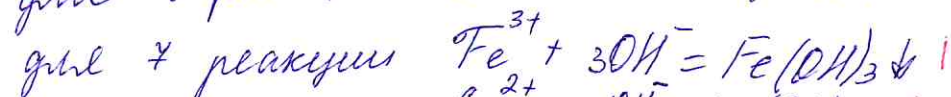
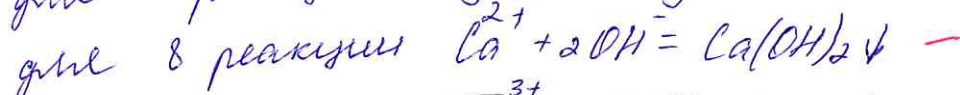
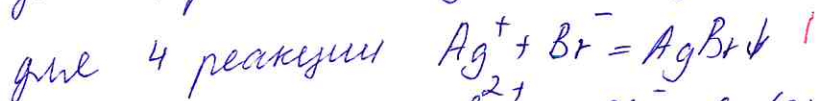
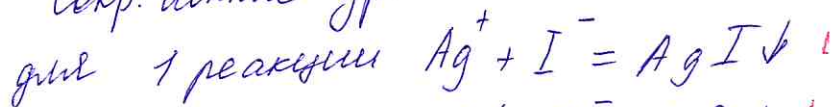


1-8 \checkmark
2 05 \checkmark
3 95 \checkmark
4 95 \checkmark
5 - 5 бек. \checkmark

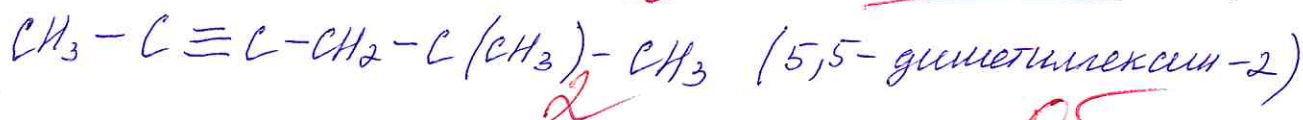
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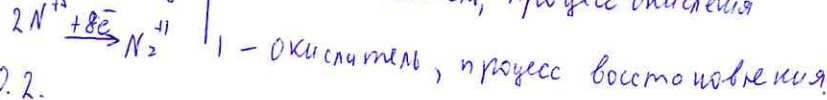
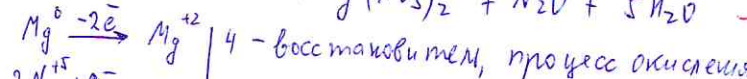
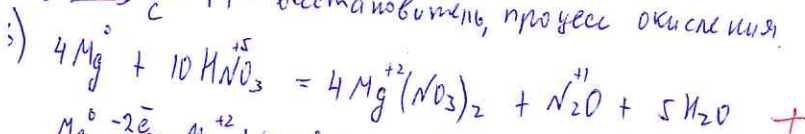
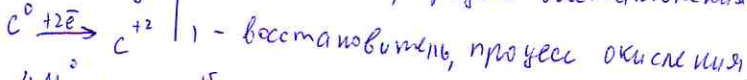
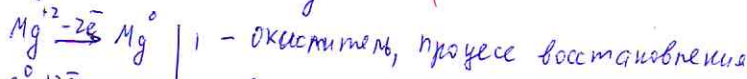
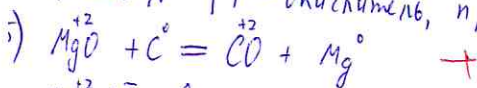
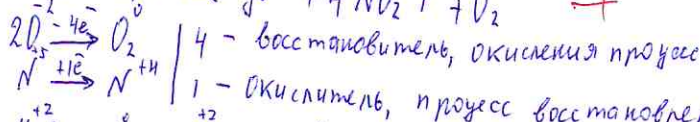
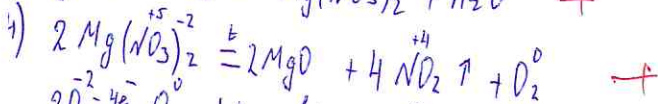
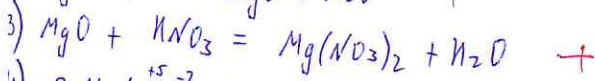
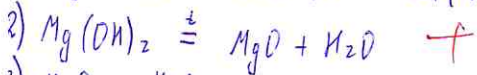
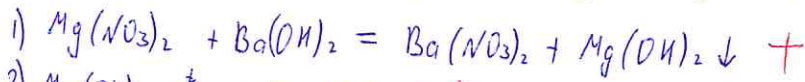
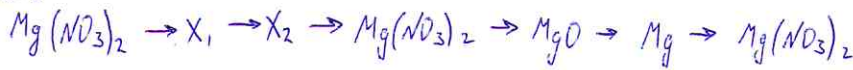


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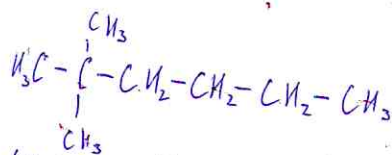
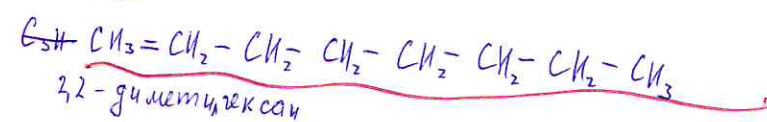
05

№10.1.



№10.2.

C_8H_{14}
n-октан



№10.3.

Дано:

$(\text{C}_x\text{H}_y\text{N}_z) = 0,452$

$(\text{CO}_2) = 0,448 \text{ л}$

$(\text{H}_2\text{O}) = 0,632$

$(\text{N}) = 0,112 \text{ л}$

$(\text{N}_2) = 1,607$

$\text{C}_x\text{H}_y\text{N}_z = ?$

Решение:

$M(\text{C}_x\text{H}_y\text{N}_z) = D(\text{N}_2) \cdot M(\text{N}_2); M(\text{C}_x\text{H}_y\text{N}_z) = 1,607 \cdot 28 \text{ г/моль} = 45 \text{ г/моль}$ 15

$n(\text{CO}_2) = \frac{V(\text{CO}_2)}{V_m}; n(\text{CO}_2) = \frac{0,448 \text{ л}}{22,4 \text{ л/моль}} = 0,02 \text{ моль}$ 15

$n(\text{C}) = n(\text{CO}_2) = 0,02 \text{ моль}$

$n(\text{H}_2\text{O}) = \frac{m(\text{H}_2\text{O})}{M(\text{H}_2\text{O})}; n(\text{H}_2\text{O}) = \frac{0,632}{18 \text{ г/моль}} = 0,035 \text{ моль}$

$2n(\text{H}) = n(\text{H}_2\text{O}) = 0,07 \text{ моль}$ 15

$n(\text{N}) = \frac{V(\text{N})}{V_m}; n(\text{N}) = \frac{0,112 \text{ л}}{22,4 \text{ л/моль}} = 0,005 \text{ моль}$ 15

$2n(\text{N}) = 0,01 \text{ моль}$ 15

$x : y : z = 0,02 : 0,07 : 0,01$ 15

$x : y : z = 2 : 7 : 1$

$M(\text{C}_2\text{H}_7\text{N}) = 12 \cdot 2 + 1 \cdot 7 + 14 = 45 \text{ г/моль}$

$M(\text{C}_2\text{H}_7\text{N}) = M(\text{C}_x\text{H}_y\text{N}_z)$

Ответ: $\text{C}_2\text{H}_7\text{N}$ 15

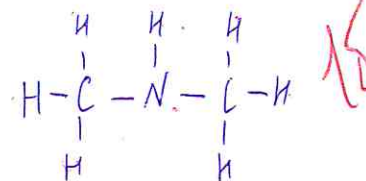
см. на обложке

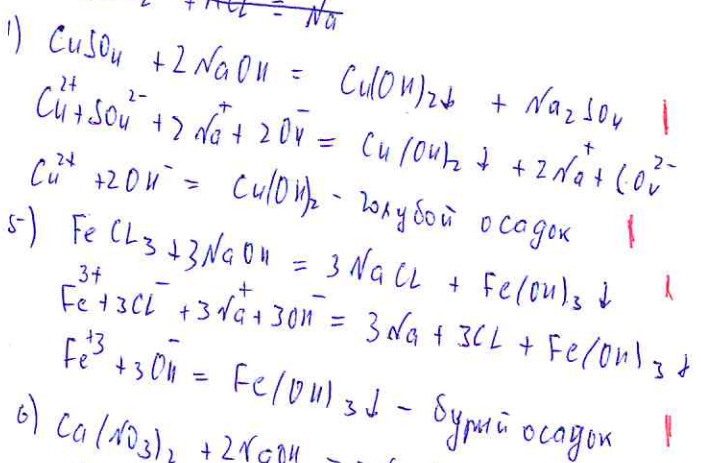
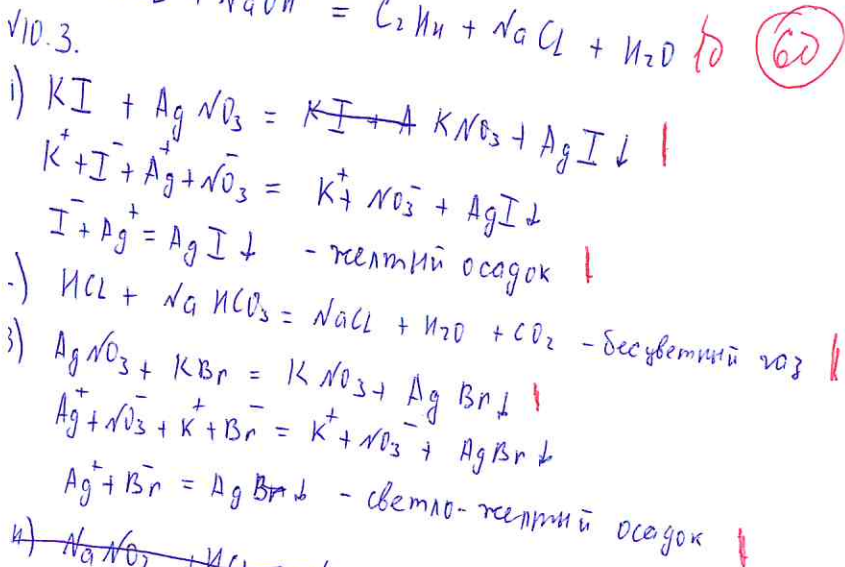
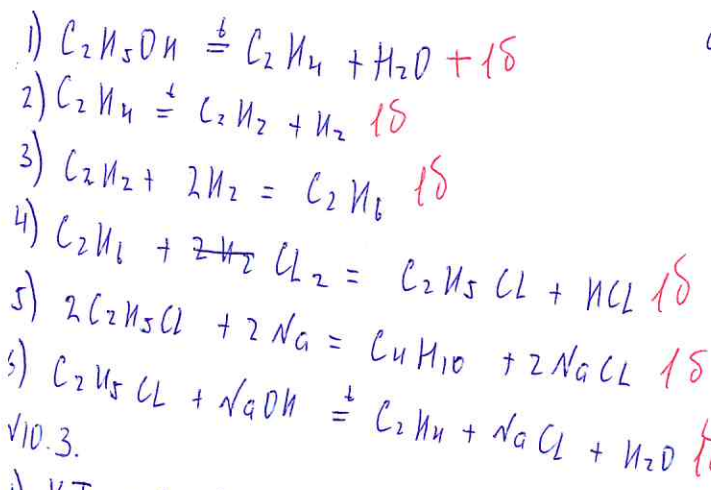
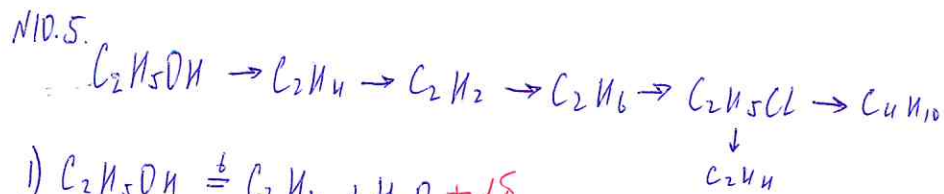
1 - 9d
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 3 95
 4 70
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06

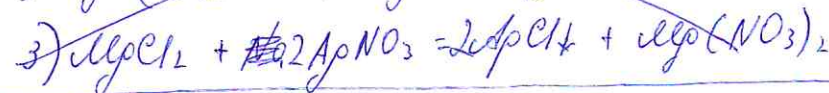
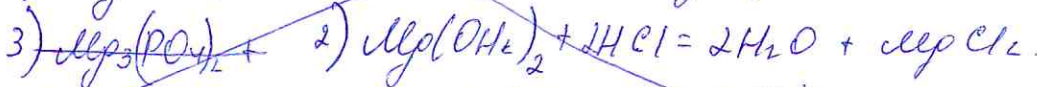
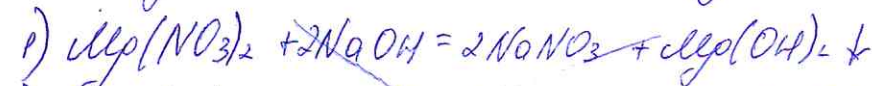
нет ур - 2

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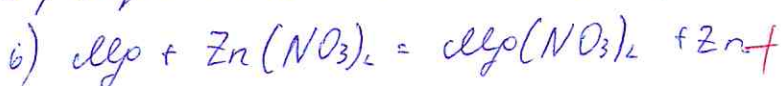
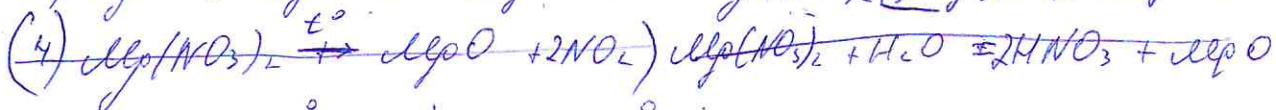
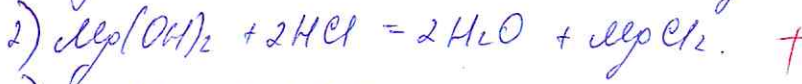
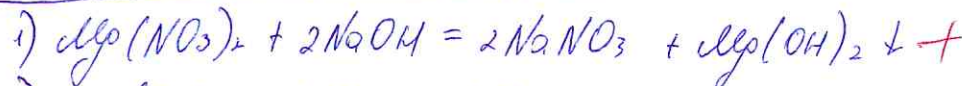




NaOH - щелочной раствор (сильный)
 NaHCO₃ - слабый раствор (слабый)

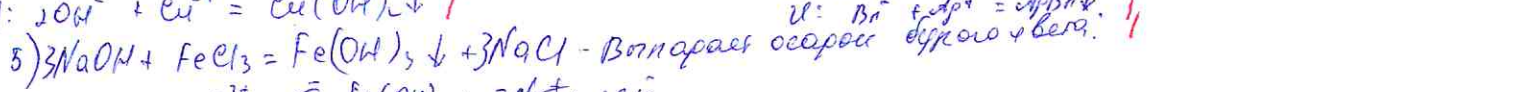
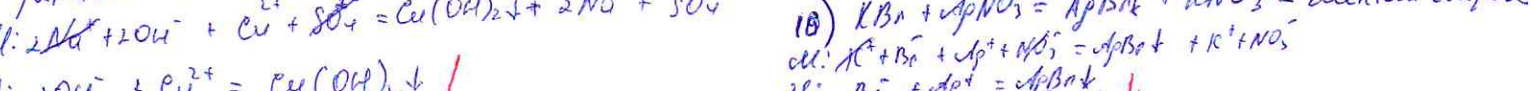
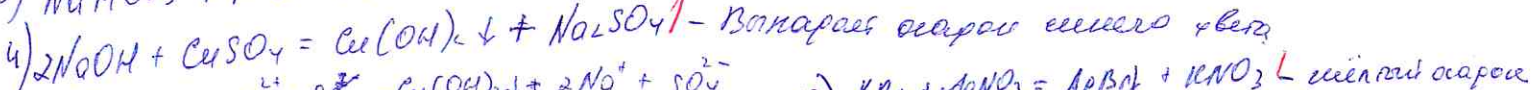
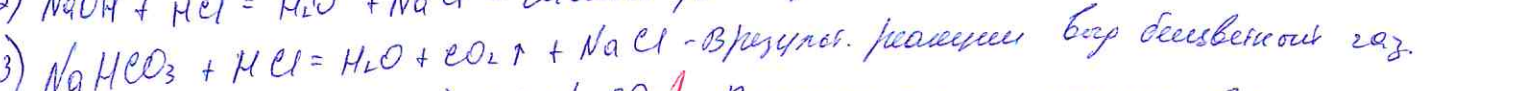
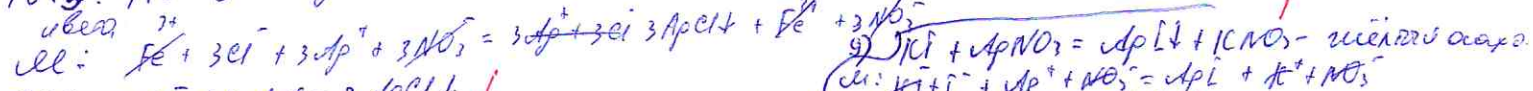
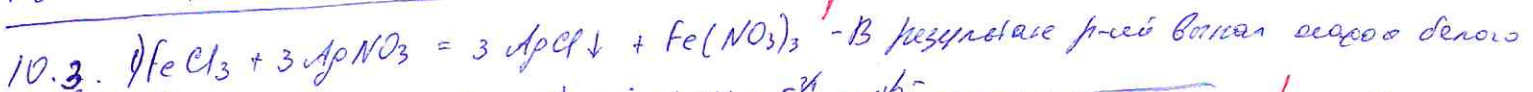
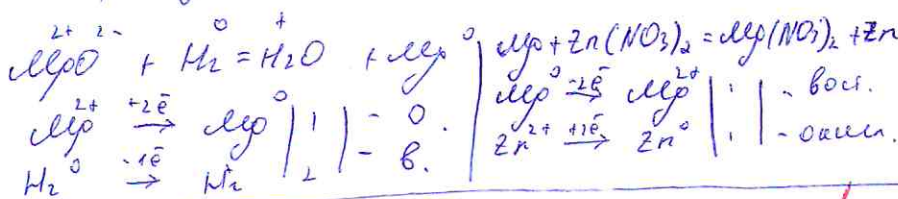


1-105. ~~105~~
2-05. ~~05~~
3-95. ~~95~~
4-55. ~~55~~
5-38. ~~38~~



1) Кислотные в-ва: $\text{Mg}(\text{OH})_2 \downarrow$, MgCl_2 .

2) ОВР: 5); 6); 4). +



ОВР-?

10.5.

- 1) $C_2H_5OH \xrightarrow{-H_2O} C_2H_4 + H_2O$ (и-е дегидратация). +
- 2) $C_2H_4 \xrightarrow{+H_2} C_2H_6$ (гидрирование). +
- 3) $C_2H_2 + 2H_2 \rightarrow C_2H_6$ +
- 4) $C_2H_6 + NaCl \rightarrow C_2H_5Cl + H_2 \uparrow$ -
- 5) $C_2H_5Cl \xrightarrow{-HCl} C_2H_4$ -
- 6) C_2H_5Cl -

10.4.

Решение.

$$C_xH_yO_wN_z + O_2 = xCO_2 + \left(\frac{y}{2}\right)H_2O + \left(\frac{w}{2}\right)H_2O + \left(\frac{z}{2}\right)N_2 \quad 15$$

$$M = 1,608 \cdot 28 = 45 \text{ г/моль.} \quad 15$$

$$1) n(C) = n(CO_2) = \frac{0,448}{22,4} = 0,02 \text{ моль.} \quad 15$$

$$n(H) = 2n(H_2O) = 2 \cdot \frac{0,63}{18} = 0,07 \text{ моль.} \quad 15$$

$$n(N) = 2n(N_2) = 2 \cdot \frac{0,112}{22,4} = 0,01 \text{ моль.} \quad 15$$

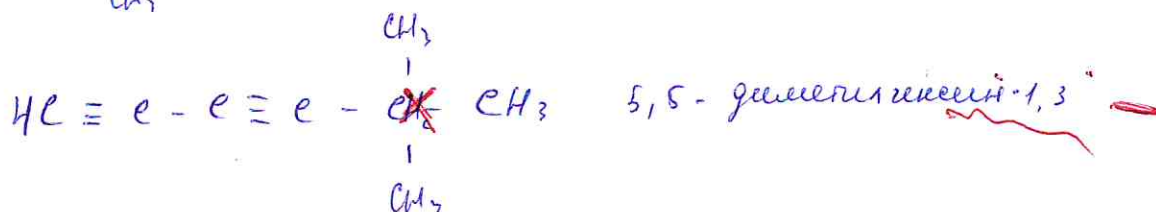
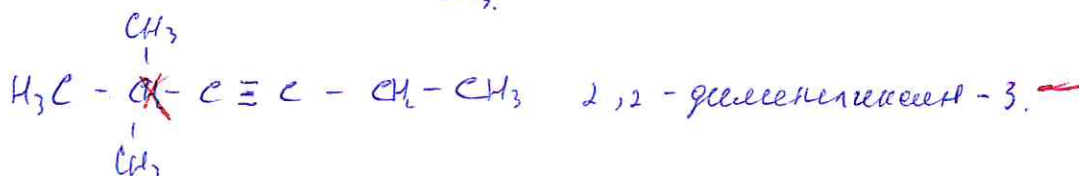
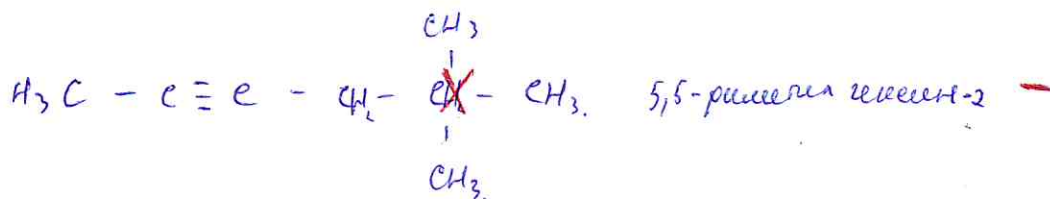
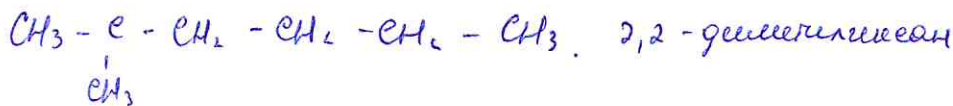
$$3) m(C) + m(H) + m(N) = (0,24 + 0,07 + 0,14) \text{ г} = m(\text{исход. в-ва}) = 0,45 \text{ г.} \quad 25$$

Отсюда следует, что O_2 в в-ве отсутствует.

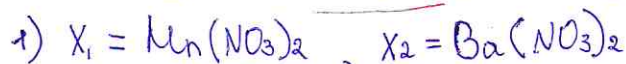
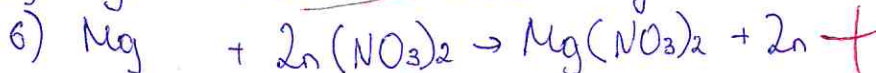
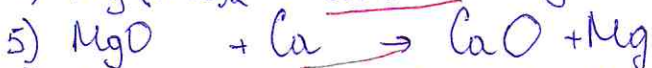
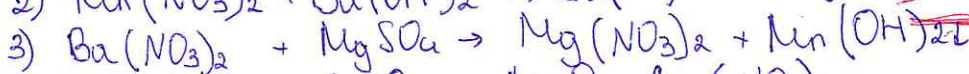
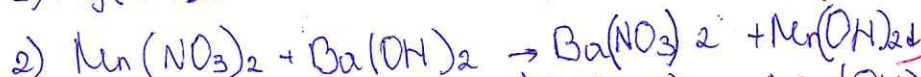
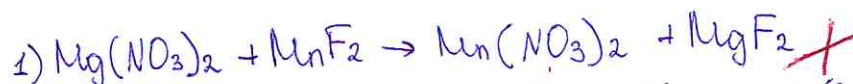
$M_r(\text{в-ва})$:

$$n(C) : n(H) : n(N) = 0,02 : 0,07 : 0,01 = 2 : 7 : 1. \quad \text{Отсюда следует формула: } 2 : 7 : 1 = C_2H_7N. \quad 15$$

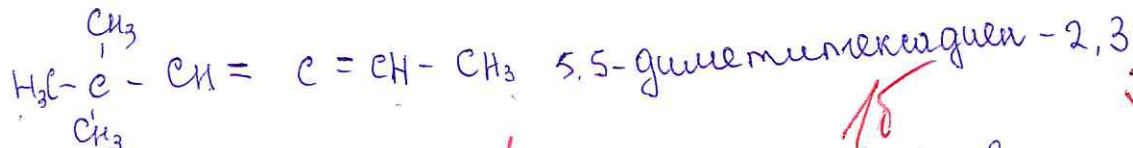
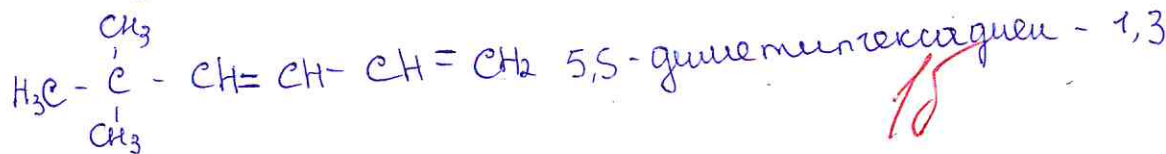
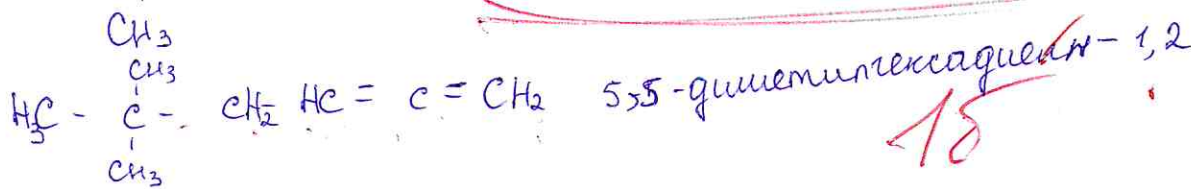
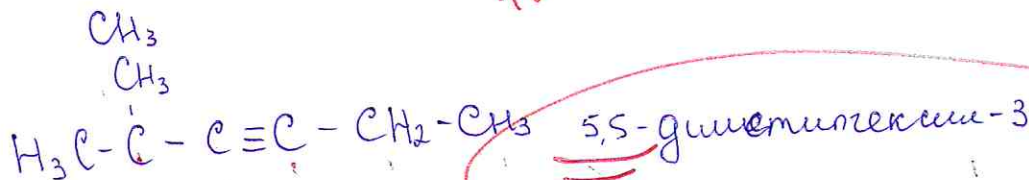
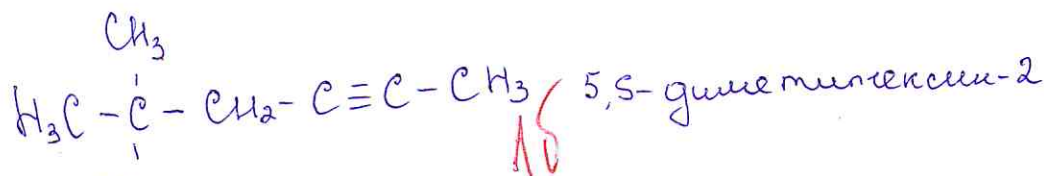
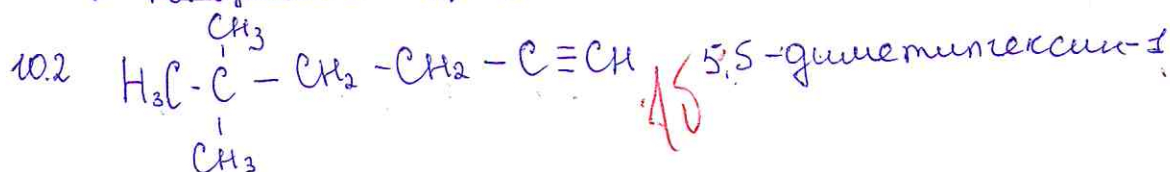
10.2. CH_3



10.1



2) ~~Реакции~~ ОВР являются реакцией N с Hg.



10.3 ① $\text{KI} + \text{AgNO}_3 \rightarrow \text{AgI} \downarrow + \text{KNO}_3$ к KI применим AgNO_3 , в результате получили осадок AgI белого цвета. $\text{I}^- + \text{Ag}^+ \rightarrow \text{AgI} \downarrow$

② NaOH. к NaOH применим фенолфталеин и получили р-р. мал. цвета.

③ $\text{NaHCO}_3 + \text{HCl} \rightarrow \text{H}_2\text{O} + \text{CO}_2 + \text{NaCl}$ к NaHCO_3 мы применим HCl и увидим выделение CO_2 $\text{HCO}_3^- + \text{H}^+ \rightarrow \text{H}_2\text{CO}_3$

1 25 шт
2 66 шт
3 95 шт
4 95 шт
5 - 6 шт. кл

15/раз
ука

- 4) $KBr + AgNO_3 \rightarrow AgBr \downarrow + KNO_3$ к KBr мы применим $AgNO_3$ увидим выпадение светло-желтого осадка $Br^- + Ag^+ \rightarrow AgBr$
- 5) $NaNO_2 + AgNO_3 \rightarrow AgNO_2 \downarrow + HNO_3$ к $NaNO_2$ применим $AgNO_3$, выпадет осадок в кислой среде. Затем применим ср. р-р фенолфталеина и р-р изменил цвет ~~с роза~~ на красный.
- 6) $CuSO_4 + 2NaOH \rightarrow Cu(OH)_2 \downarrow + Na_2SO_4$ к $CuSO_4$ применим $NaOH$ получим осадок $Cu(OH)_2$ $Cu^{2+} + 2OH^- \rightarrow Cu(OH)_2$
- 7) $FeCl_3 + 3NaOH \rightarrow Fe(OH)_3 \downarrow + 3NaCl$ к $FeCl_3$ мы применим $NaOH$, получим осадок $Fe(OH)_3$ бурого цвета. $Fe^{3+} + 3OH^- \rightarrow Fe(OH)_3$
- 8) $2NaOH + Ca(NO_3)_2 \rightarrow Ca(OH)_2 + 2NaNO_3$ к $NaOH$ применим $Ca(NO_3)_2$, увидим выпадение р-ра.

4. Дано | Решение

$n(H_2O) = 0,632$ 1) $V(H_2O) = \frac{0,63}{18} = 0,035$ моль, $2V(H_2O) = V(H) = 0,07$ моль 15

$V(N_2) = 0,112$ 2) $V(CO_2) = \frac{0,448}{22,4} = 0,02$ моль, $V(CO_2) = V(C) = 0,02$ моль 15

$V(CO_2) = 0,112$ 3) $V(N_2) = \frac{0,112}{22,4} = 0,005$ моль, $V(N) = 2V(N_2) = 0,01$ моль 15

$n(исх. в-ва) = 0,632$ 4) $m(H) = 0,07 \cdot 1 = 0,07$ г, $m(C) = 0,02 \cdot 12 = 0,24$ г, $m(N) = 0,01 \cdot 14 = 0,14$ г

$n(исх. в-ва) = 1,607$ 5) $V(C) : V(H) : V(N) = 0,02 : 0,07 : 0,01 = 2 : 7 : 1 = C_2H_7N$ - др. др-на 15

$M(C_2H_7N) = 45$ г/моль 15

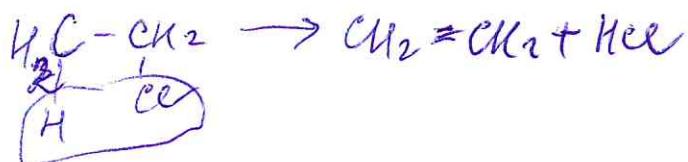
$M(исх.) = D \cdot m$

6) $M(исх. в-ва) = 45$ г/моль

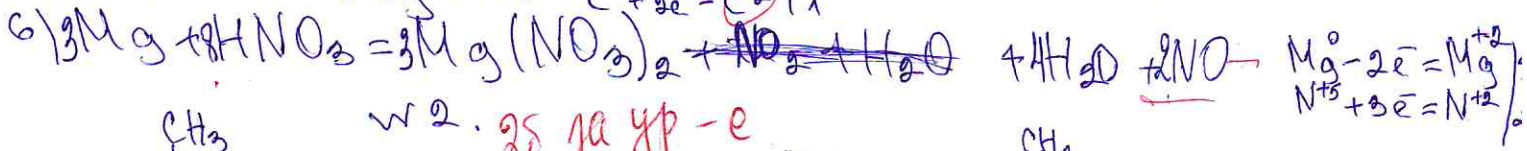
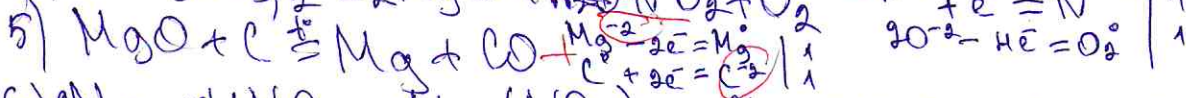
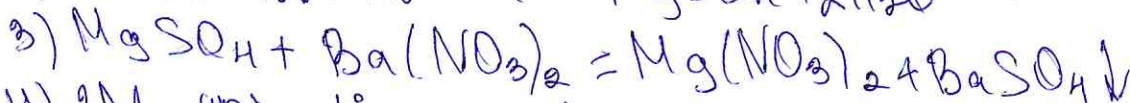
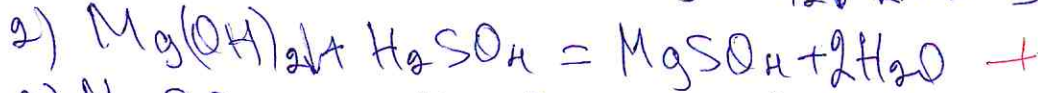
$H - \overset{\overset{H}{|}}{C} - \overset{\overset{H}{|}}{C} - NH_2$ 15

Ответ: $C_2H_5NH_2$.

- 0.5 1) $C_2H_5OH \xrightarrow{KOH} C_2H_4 + H_2O +$
- 2) $C_2H_4 \xrightarrow{KOH} C_2H_2 + H_2 +$
- 3) $C_2H_2 + 2H_2 \xrightarrow{KOH} C_2H_6 +$
- 4) $C_2H_6 + Cl_2 \xrightarrow{h\nu} C_2H_5Cl + HCl +$
- 5) $2C_2H_5Cl + 2Na \rightarrow 2NaCl + C_4H_{10} +$
- 6) $C_2H_5Cl \rightarrow C_2H_4 + HCl +$

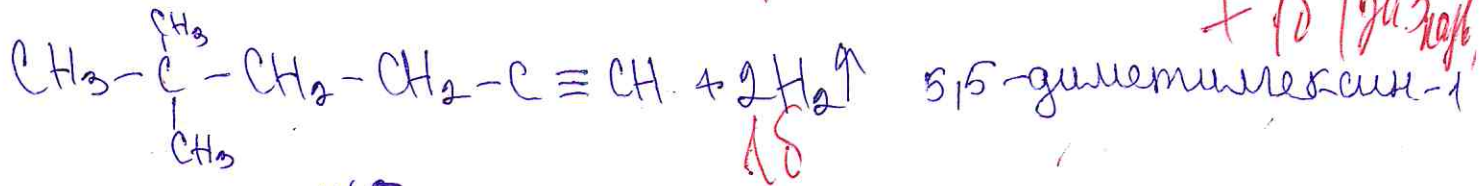
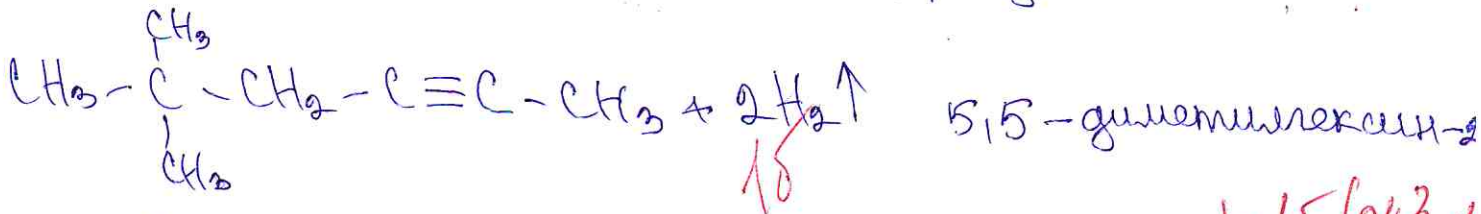
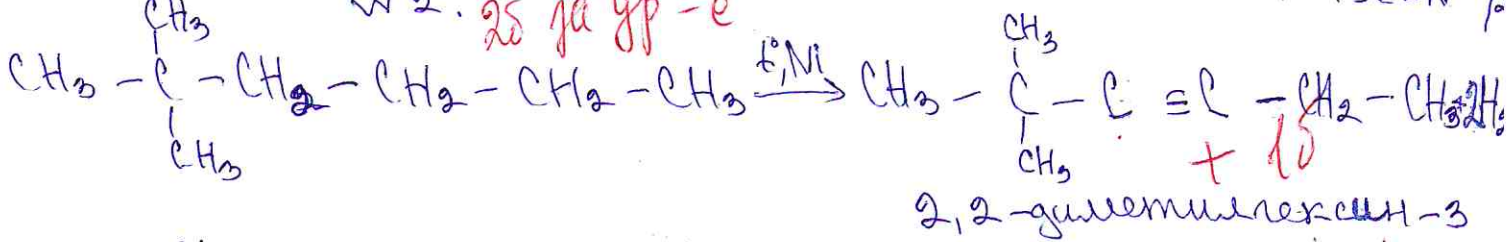


W 1.

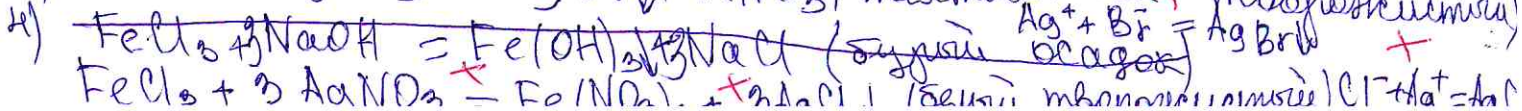
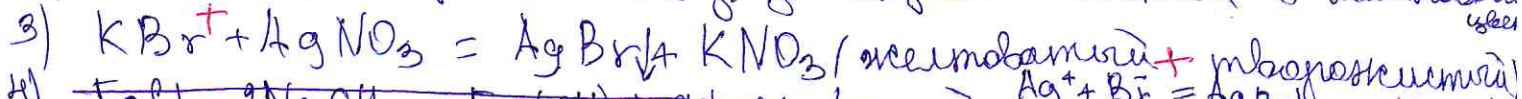
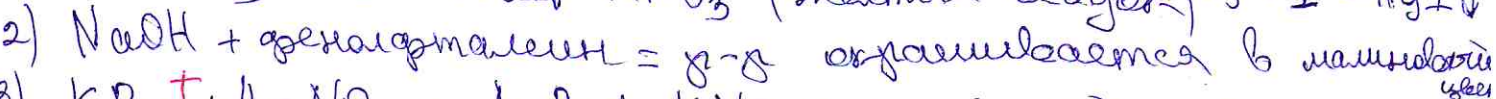
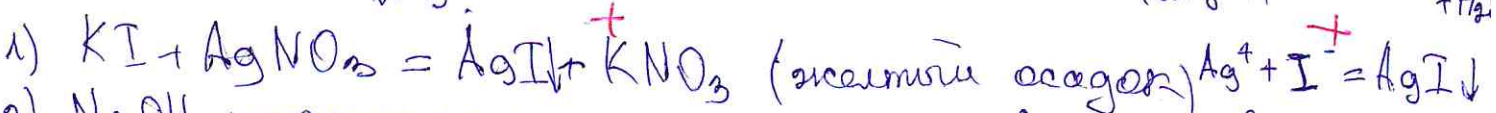
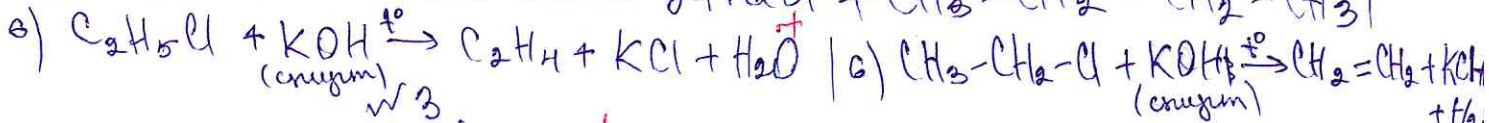
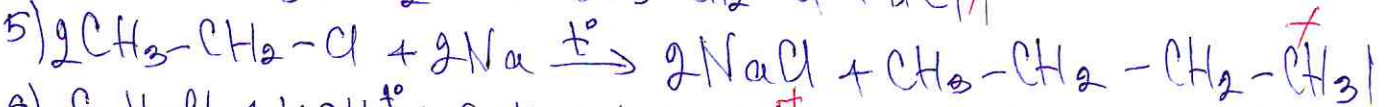
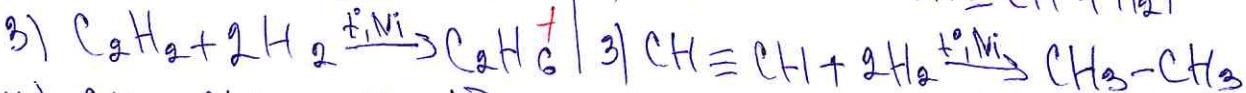
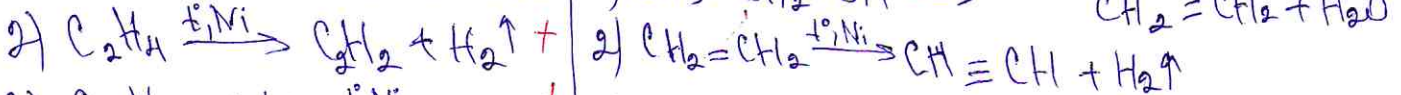
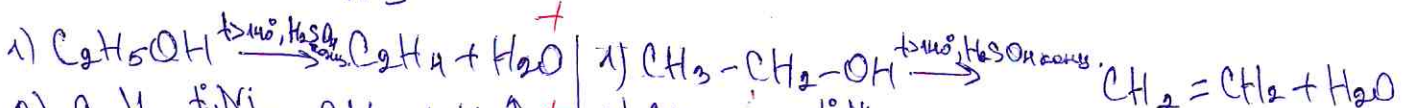


1. -3 балла
2. 6 балла
3. 9 балла
4. 8 балла
5. -6 балла

W 2. 25 за ур - e



W 5



- 5) $\text{CuSO}_4 + 2\text{NaOH} = \text{Cu(OH)}_2 \downarrow + \text{Na}_2\text{SO}_4$ (темно-синий осадок)
 6) $\text{HCl} + \text{NaHCO}_3 = \text{NaCl} + \text{CO}_2 \uparrow + \text{H}_2\text{O}$ (бесцветный газ)
 7) $\text{Ca(NO}_3)_2 + 2\text{NaOH} \rightarrow \text{Ca(OH)}_2 + 2\text{NaNO}_3$ (темные ж-ра)
 8) $\text{FeCl}_3 + 3\text{NaOH} \rightarrow \text{Fe(OH)}_3 \downarrow + 3\text{NaCl}$ (бурые осадок)
 9) $\text{NaNO}_2 -$

в н.

$$n(\text{CO}_2) = \frac{0,44 \text{ г}}{44 \text{ г/моль}} = 0,01 \text{ моль}$$

$$n(\text{H}_2\text{O}) = \frac{0,36 \text{ г}}{18 \text{ г/моль}} = 0,02 \text{ моль}$$

$$n(\text{N}_2) = \frac{0,112 \text{ г}}{28 \text{ г/моль}} = 0,004 \text{ моль}$$

$$n(\text{C}) = n(\text{CO}_2) = 0,01 \text{ моль}$$

$$n(\text{H}) = 2n(\text{H}_2\text{O}) = 0,04 \text{ моль}$$

$$n(\text{N}) = 2n(\text{N}_2) = 0,008 \text{ моль}$$

$$m(\text{C}) = 12 \text{ г/моль} \cdot 0,01 \text{ моль} = 0,12 \text{ г}$$

$$m(\text{H}) = 1 \text{ г/моль} \cdot 0,04 \text{ моль} = 0,04 \text{ г}$$

$$m(\text{N}) = 14 \text{ г/моль} \cdot 0,008 \text{ моль} = 0,112 \text{ г}$$

$$m(\text{O}) = 0,452 - 0,12 \text{ г} - 0,04 \text{ г} - 0,112 \text{ г} = 0,18 \text{ г} \Rightarrow \text{суммарно нет}$$

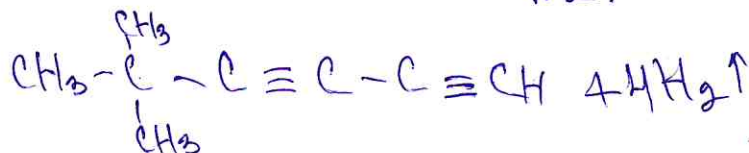


$$x:y:z = 0,01:0,04:0,008 = 1:4:0,8$$

$\text{C}_2\text{H}_8\text{N}$ - маловероятн. формула

$\text{CH}_3\text{CH}_2\text{NH}_2$ этиламин

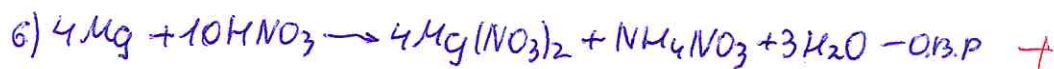
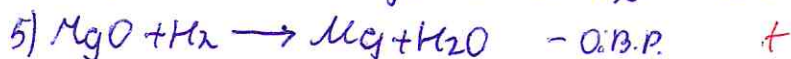
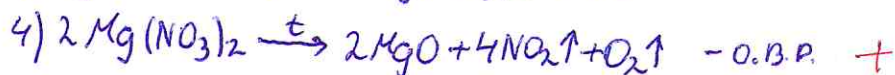
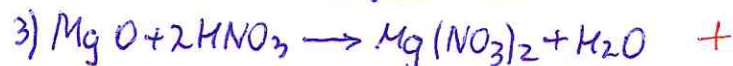
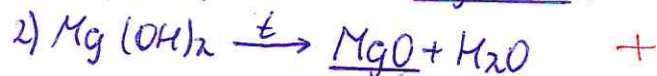
в 2.



5,5-диметилгексин-1,2

~~5,5-диметилгексин-2,3~~

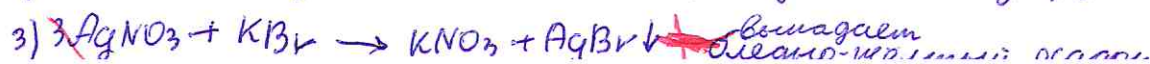
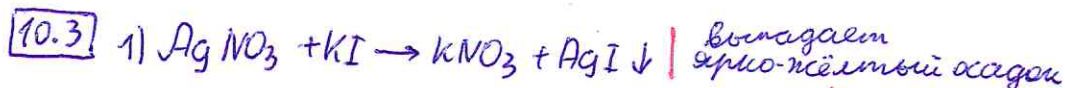
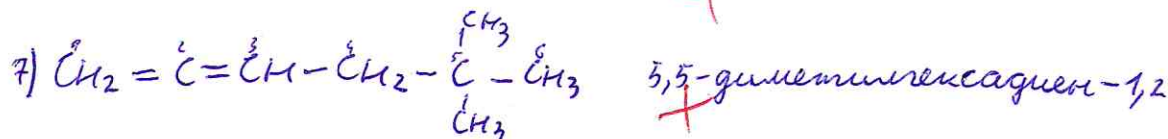
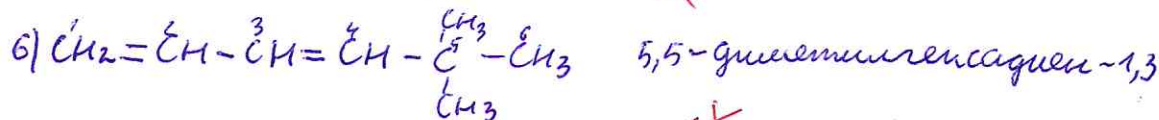
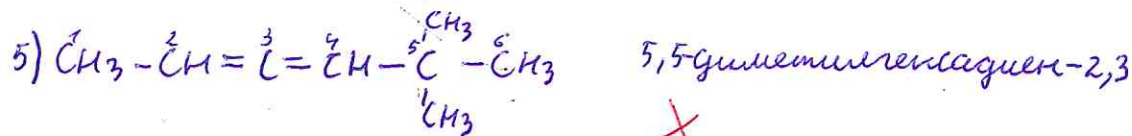
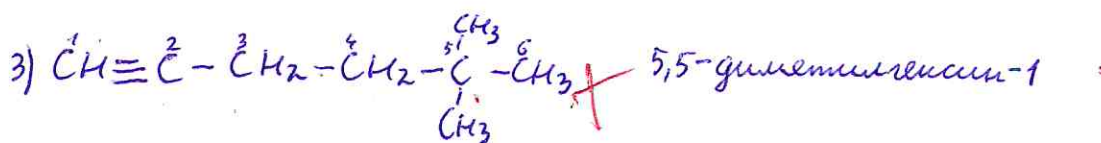
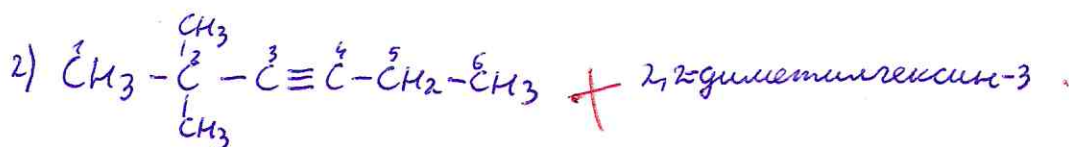
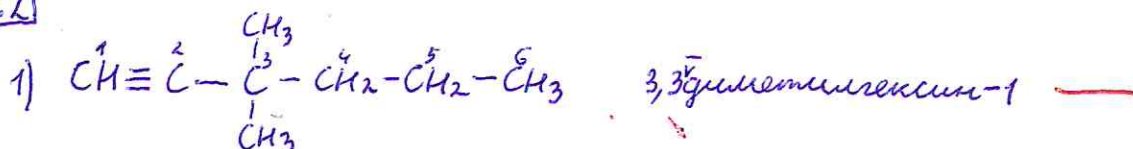
~~5,5-диметилгексин-1,2~~



Ответ: 1) $X_1 = Mg(OH)_2$; $X_2 = MgO$

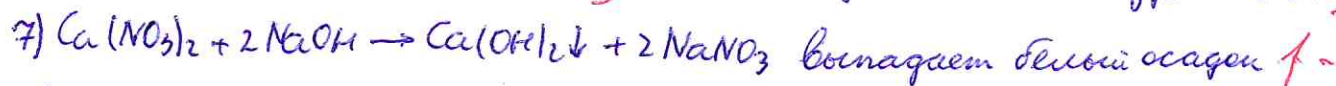
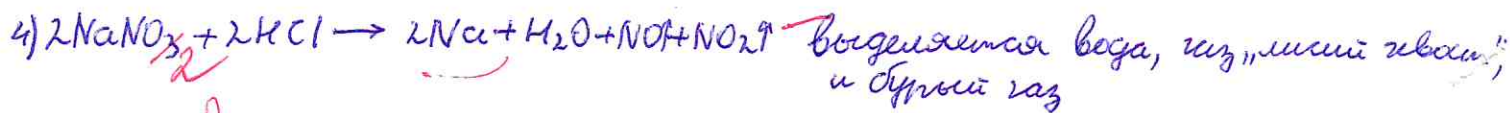
2) Окислительно-восстановительные реакции под номерами 4), 5), 6)

10.2



1 - 10
2 - 80
3 - 35
4 - 65
5 - 65
6 - 100

65 + 25
да
наб.



8) NaOH распознается в лакмусе - синий, в ф/ф - малиновый.

10.4 Дано:

$$D_{\text{взр}} = 1,607$$

$$m(\text{N}_2) = 0,452$$

$$V(\text{CO}_2) = 0,448 \text{ л}$$

$$m(\text{H}_2\text{O}) = 0,632$$

$$V(\text{N}_2) = 0,112 \text{ л}$$

$$\text{C}_x\text{H}_y\text{N} - ?$$

Решение:

1) $\mu(\text{C}_x\text{H}_y\text{N}) = 1,607 \cdot 28 = 45,2 \text{ г/моль} + 15$

2) $n(\text{CO}_2) = \frac{0,448 \text{ л}}{22,4 \text{ л/моль}} = 0,02 \text{ моль} +$

$n(\text{C}) = 2n(\text{CO}_2) = 0,02 \text{ моль} + 15$

$m(\text{C}) = 0,02 \cdot 12 = 0,242$

3) $n(\text{N}_2) = \frac{0,112 \text{ л}}{22,4 \text{ л/моль}} = 0,005 \text{ моль}$

$n(\text{N}) = 2n(\text{N}_2) = 0,005 \cdot 2 = 0,01 \text{ моль} 15$

$m(\text{N}) = 0,01 \cdot 14 = 0,142$

4) $n(\text{H}_2\text{O}) = \frac{0,632}{18 \text{ г/моль}} = 0,035 \text{ моль}$

$n(\text{H}) = 2n(\text{H}_2\text{O}) = 0,035 \cdot 2 = 0,07 \text{ моль} 15$

$m(\text{H}) = 0,07 \cdot 1 = 0,072$

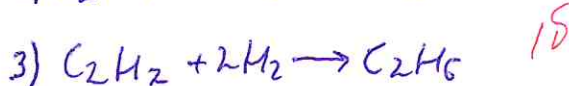
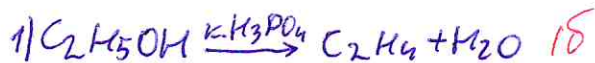
5) $\text{C}:\text{H}:\text{N} = 0,242 : 0,072 : 0,142 = 0,02 : 0,01 : 0,01 = 2 : 1 : 1$

Простейшая формула $\text{C}_2\text{H}_7\text{N} 15$

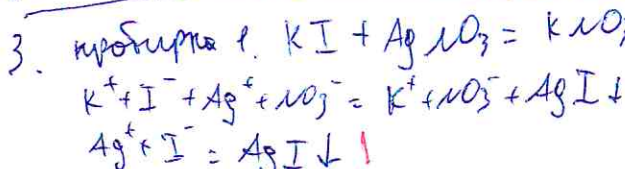
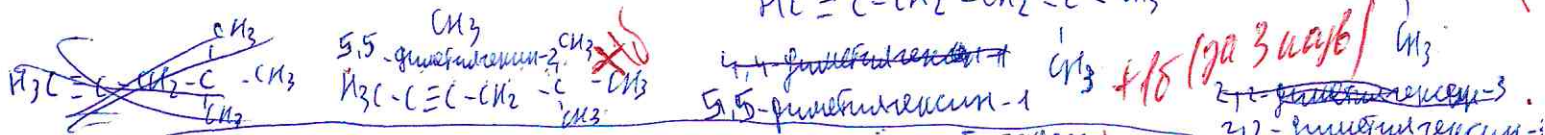
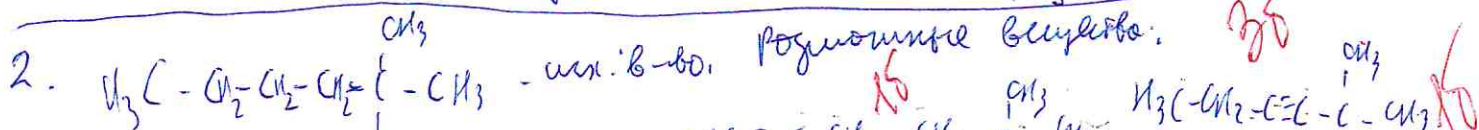
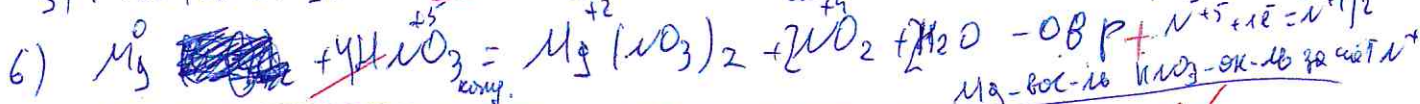
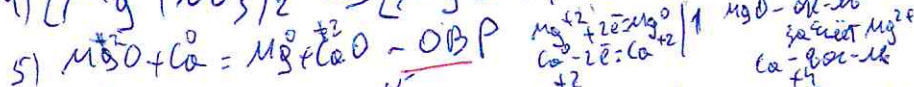
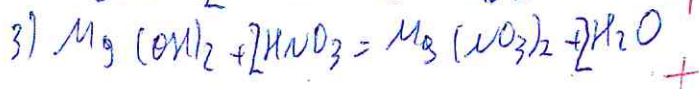
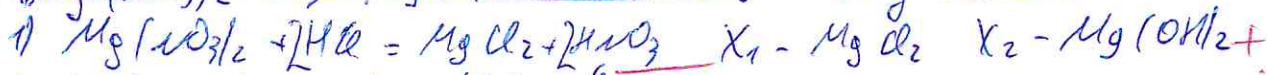
Проверка $M_r(\text{C}_2\text{H}_7\text{N}) = 12 \cdot 2 + 14 + 7 = 45 \text{ г/моль}$

$\frac{45}{45} = 1$

Ответ: $\text{C}_2\text{H}_7\text{N}$

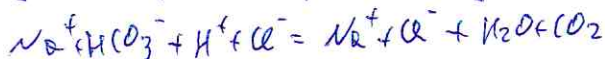


1 - 65
2 - 45
3 - 95
4 - 55
5 - 65

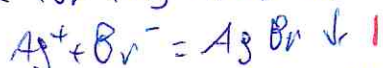
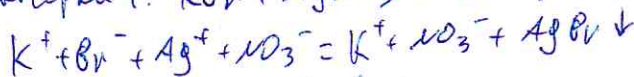


пробирка 2. NaOH в растворе фенолфталеина приобретает малиновое окрашивание

пробирка 3. $NaHCO_3 + HCl = NaCl + H_2O + CO_2 \uparrow$ образование бесцветного газа, выходящего при помешивании излившейся воды

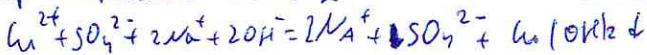


пробирка 4. $KBr + AgNO_3 = KNO_3 + AgBr \downarrow$ белый - желтый осадок

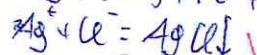


пробирка 5. $NaNO_2 + HCl = NaCl + NO + H_2O$ - при $NaNO_2$ в р-ре фенолфталеина приобретает малиновое окрашивание

пробирка 6. $Li_2SO_4 + 2NaOH = LiOH + Na_2SO_4$ - выпадение белого осадка $LiOH$

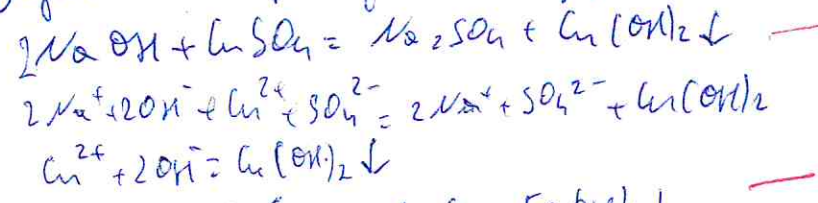


пробирка 7. $3AgNO_3 + FeCl_3 = Fe(NO_3)_3 + 3AgCl \downarrow$ - выпадение белого хлоридного осадка

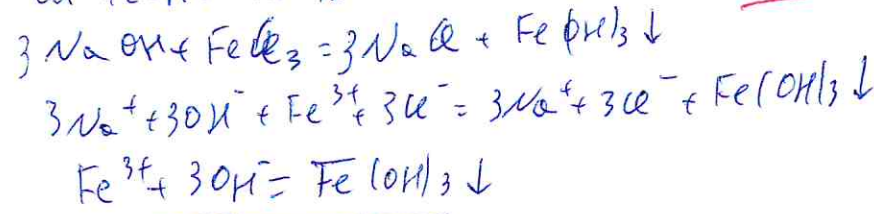


пробирка 8. $LiNO_3 + NaOH = LiOH + NaNO_3$ - образование белого хлоридного осадка

$Ca + 2OH^- = Ca(OH)_2 \downarrow$
 Возможные реакции между б-вами:

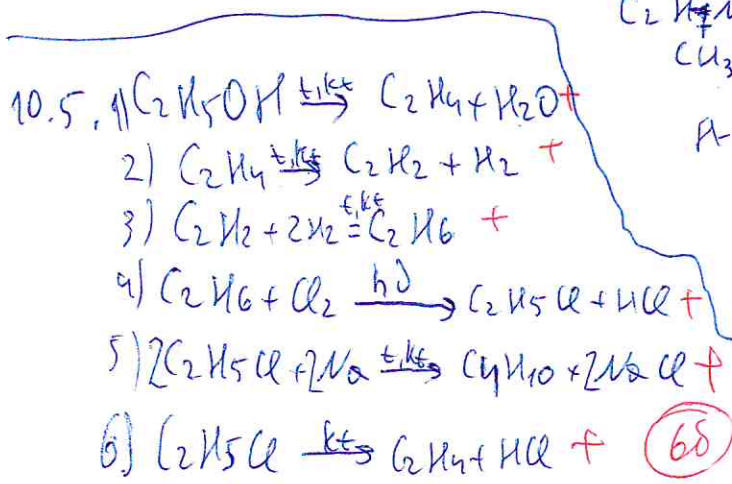


нет ОВР.



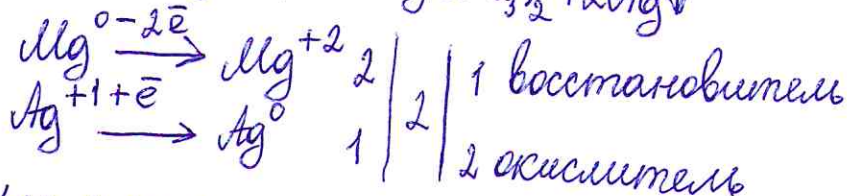
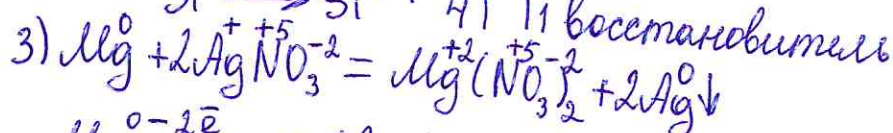
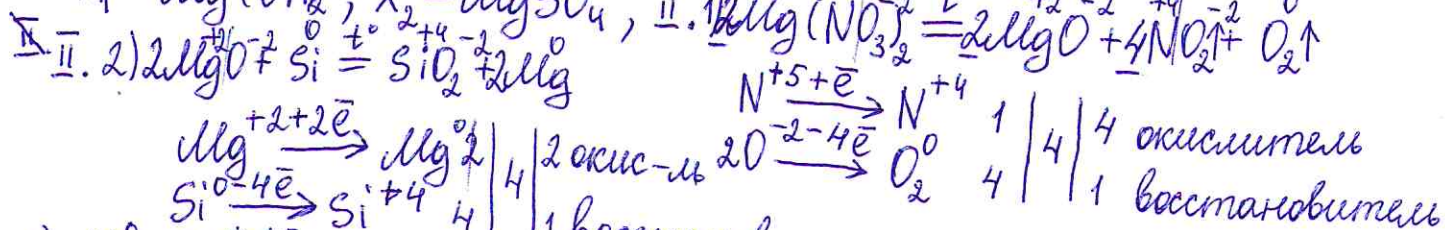
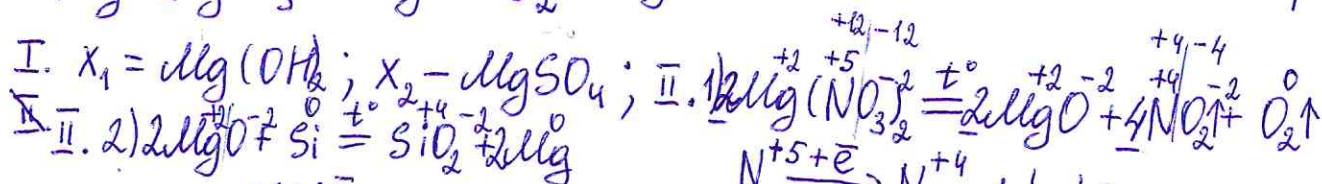
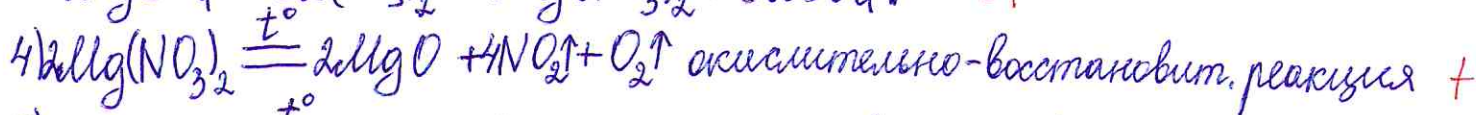
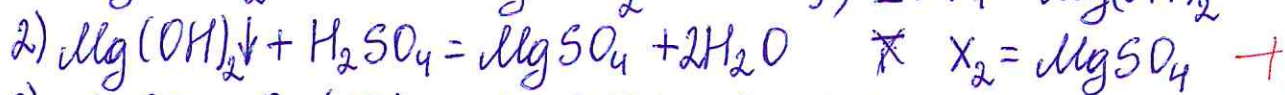
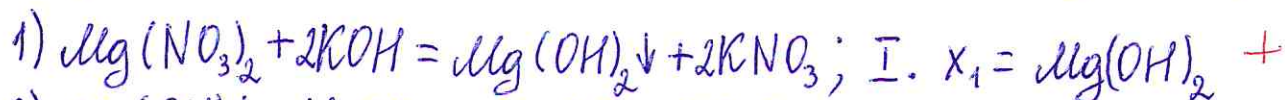
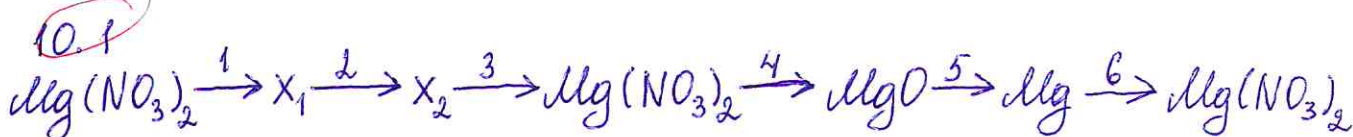
10.4. Дано:
 $m_{b-va} = 0,952$
 $V(CO_2) = 0,448$
 $m(H_2O) = 0,632$
 $V(N_2) = 0,112$
 $D(по N_2) = 1,607$
 оп. мо - ?

Решение:
 $D(по N_2) = \frac{M_{b-va}}{28}$ $M_{b-va} = 28 \cdot 1,607 = 45 \text{ г/моль}$ 15
 $n(CO_2) = \frac{V}{V_m} = \frac{0,448}{22,4} = 0,02 \text{ моль}$
 $n(H_2O) = \frac{m}{M} = \frac{0,63}{18} = 0,035 \text{ моль}$
 $n(N_2) = \frac{V}{V_m} = \frac{0,112}{22,4} = 0,005 \text{ моль}$
 $n(CO_2) = n(C) = 0,02 \text{ моль}$ 15
 ~~$n(H_2O) = n(H) = 0,07 \text{ моль}$~~
 ~~$n(N_2) = n(N) = 0,01 \text{ моль}$~~
 $n(H) = n(H_2O) \cdot 2 = 0,035 \cdot 2 = 0,07 \text{ моль}$ 15
 $n(N) = n(N_2) \cdot 2 = 0,005 \cdot 2 = 0,01 \text{ моль}$ 15
 $m(C) = n(C) \cdot A_r(C) = 0,02 \cdot 12 = 0,24 \text{ г}$
 $m(H) = n(H) \cdot A_r(H) = 0,07 \cdot 1 = 0,07 \text{ г}$
 $m(N) = n(N) \cdot A_r(N) = 0,01 \cdot 14 = 0,14 \text{ г}$
 $m(O) = 0,952 - (0,24 + 0,07 + 0,14) = 0,502 \text{ г}$
 $n(O) = \frac{m(O)}{M(O)} = \frac{0,502}{16} = 0,031375 \text{ моль}$
 $m(O) = 0,952 - (0,07 + 0,14 + 0,24) = 0$. Кислорода нет
 $n(C) : n(H) : n(N) = 0,02 : 0,07 : 0,01 = 2 : 7 : 1$ 15



C_2H_5N - структурная формула 15
 $CH_3-CH_2-NH_2$ (с $C_2H_5-NH_2$) - молекулярная формула.
 А $\begin{array}{c} \text{C} - \text{C} - \text{N} \\ | \quad | \quad | \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$ - структурная формула.
 Ответ: $\begin{array}{c} \text{H} - \text{C} - \text{C} - \text{N} \\ | \quad | \quad | \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$

1-10
2-10
3-10
4-10
5-10
ШИФР 10-01



N 10.2 10.4

Дано:

органич. в-во

$m(\text{в-ва}) = 0,45 \text{ г}$

сгорание

$V(\text{CO}_2) = 0,448 \text{ л}$

н.у.

$m(\text{H}_2\text{O}) = 0,63 \text{ г}$

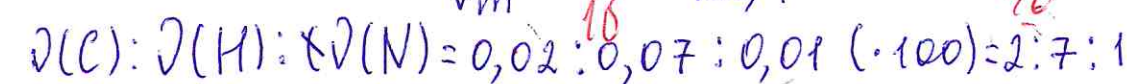
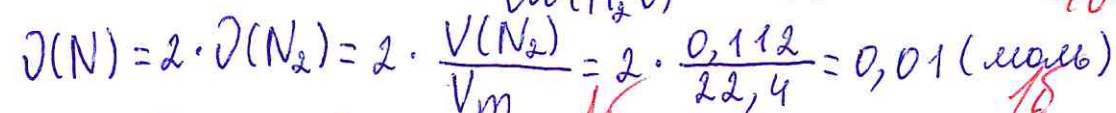
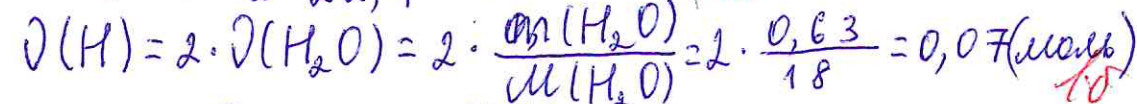
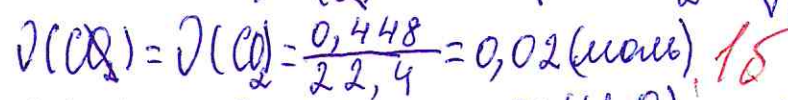
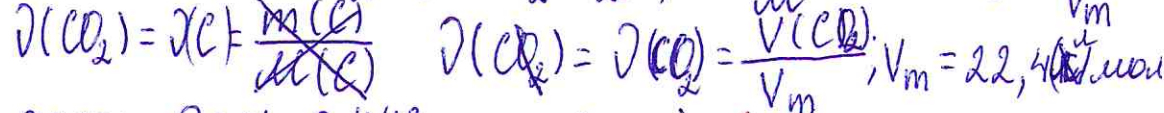
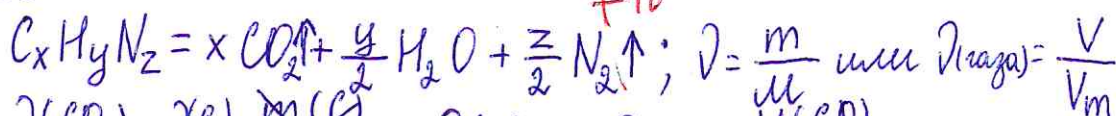
$V(\text{N}_2) = 0,112 \text{ л}$

н.у.

$D_{\text{N}_2} = 1,607$

молекулярная
формула: $V_m = 22$

Решение:



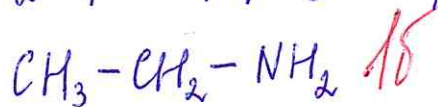
нет расчёта $m(\text{O})$ -

$$M(C_xH_yN_z) \cdot D_{N_2} \equiv \frac{M(C_xH_yN_z)}{M(N_2)}; M(C_xH_yN_z) = D_{N_2} \cdot M(N_2) =$$

$$= 1,607 \cdot 2 \cdot 14 = 44,996 \text{ (г/моль)} \approx 45 \text{ (г/моль)} \quad 15$$

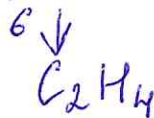
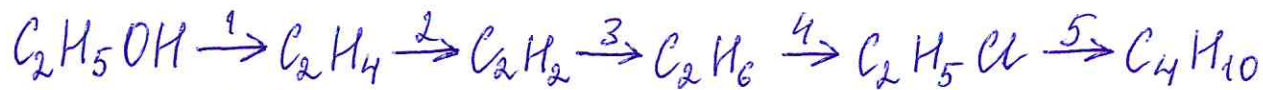
$$M(C_2H_7N) = 12 \cdot 2 + 7 \cdot 1 + 14 = 24 + 7 + 14 = 45 \text{ (г/моль)}$$

C_2H_7N — формула органического в-ва

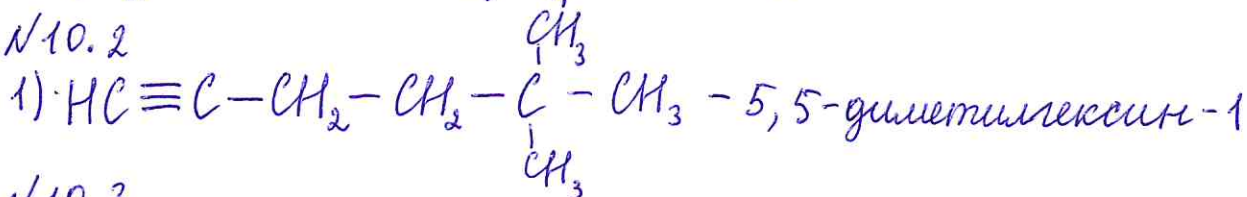


Ответ: C_2H_7N $CH_3-CH_2-NH_2$

№10.5

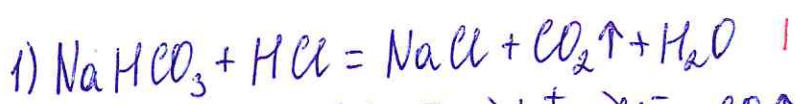


№10.2

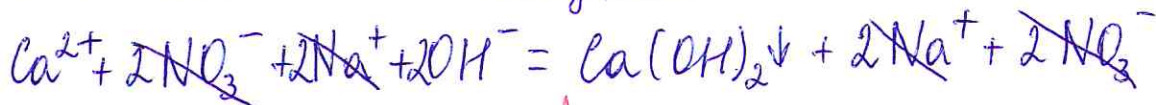
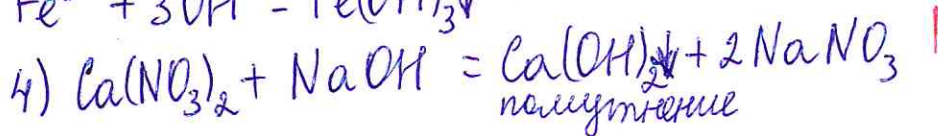
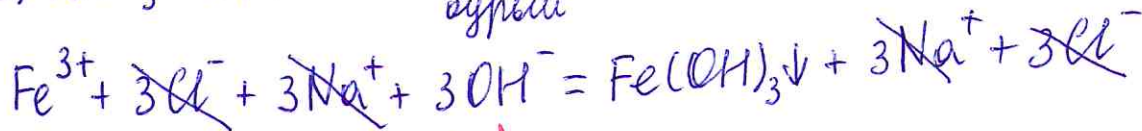
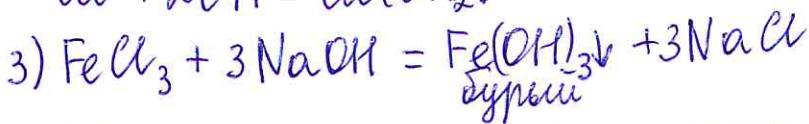
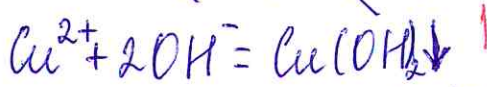
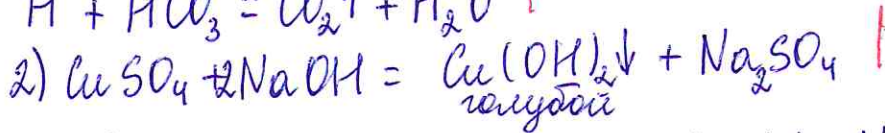


№10.3

	HCl	NaOH	фенолфталеин	AgNO ₃
KI				AgI оседает
NaOH			малиновый	
NaHCO ₃	CO ₂ ↑			
CaBr				AgBr оседает
NaNO ₂				AgNO ₂ отсутствует
ZnSO ₄		Cu(OH) ₂ ↓ голубой		
FeCl ₃		Fe(OH) ₃ ↓ бурый		
Al(NO ₃) ₃		Cu(OH) ₂ ↓ голубой		



10-01



5) ^{P-P}NaOH при взаимодействии с фенолортамидом окрашивается в малиновый цвет

