

Часть 1

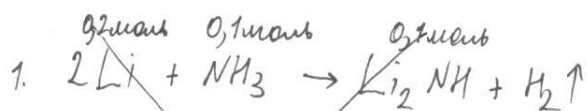
Олимпиада: **Химия 10 класс (1 часть)**

Шифр: **21300055**

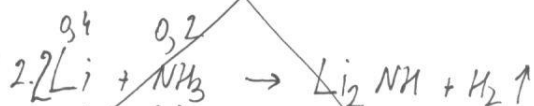
ID профиля: **873970**

Вариант 2

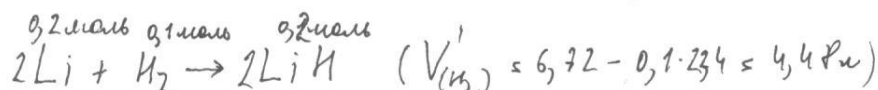
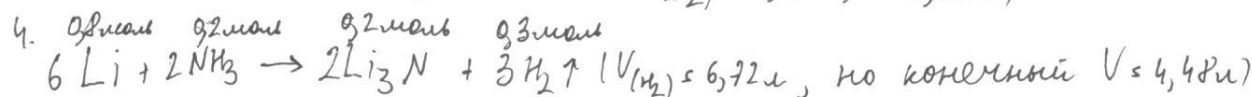
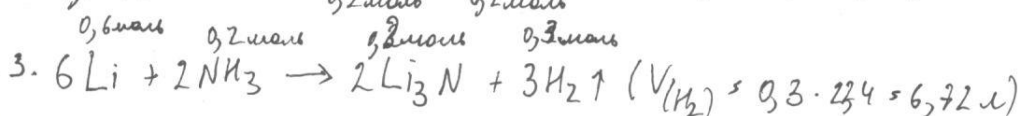
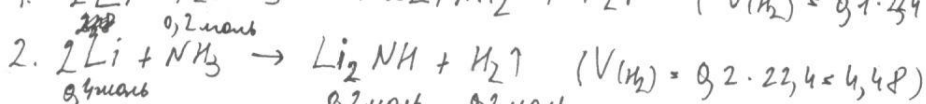
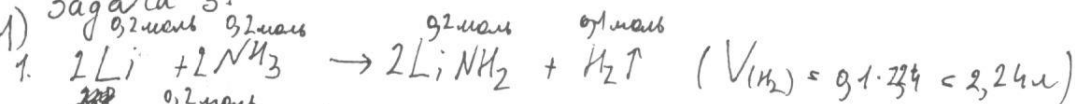
методом 2



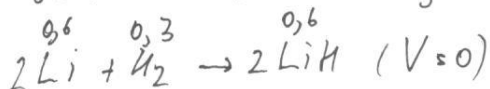
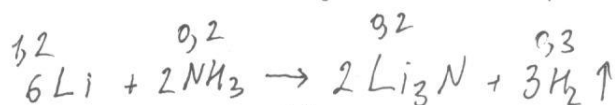
$n(\text{Li}):n(\text{NH}_3) = 2:1$, аналогично для последующих р-ций



1) Задача 3.



5. $V \leq 0 \Rightarrow$ все газы прореагировали



2) ($n(\text{Li})$ 1 2 3 4 5)

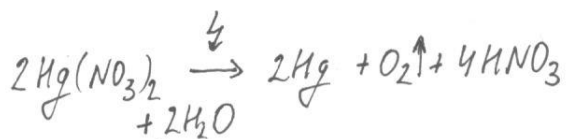
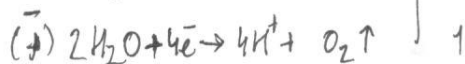
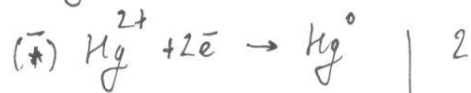
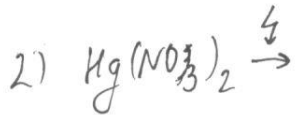
	1	2	3	4	5
$n(\text{Li}), \text{ моль}$	$\frac{1,2}{2} = 0,6$	$\frac{2,4}{2} = 1,2$	$\frac{3,6}{2} = 1,8$	$\frac{4,8}{2} = 2,4$	$\frac{6,0}{2} = 3,0$
$n'(\text{Li}), \text{ моль}$	0	0	0	$0,8 - 0,6 = 0,2$	$1,2 - 0,6 = 0,6$
$n(\text{мв.}), \text{ моль}$	$0,2 \text{ LiNH}_2$	$0,2 \text{ Li}_2\text{NH}_2$	$0,2 \text{ Li}_3\text{N}$	$0,2 \text{ Li}_3\text{N}$ $0,2 \text{ LiH}$	$0,2 \text{ Li}_3\text{N}$ $0,6 \text{ LiH}$
$m(\text{мв.}), \text{ г}$	4,6	$0,2 \cdot 29 = 5,8$	$0,2 \cdot 35 = 7$	$72 \text{ Li}_3\text{N}$ + $1,62 \text{ LiH}$ 8,62	$72 \text{ Li}_3\text{N}$ + $4,82 \text{ LiH}$ 11,82

числов 3

Задача 1

$$1) 1. \varepsilon = \frac{FI n}{t} \Rightarrow n = \frac{\varepsilon t}{FI} = \frac{200}{M+120}; \quad \frac{FI}{\varepsilon t} = \frac{M+120}{200}$$

$$2. n = \frac{\varepsilon t}{FI \cdot 3} = \frac{41,4}{M} \Rightarrow M = \frac{124,2 \cdot FI}{\varepsilon t} = \frac{124,2 \cdot (M+120)}{200} \Rightarrow M = 200 - Hg$$



$$3) n(Hg(NO_3)_2) = \frac{200^2}{320^2 \eta_{max}} = 0,625 = n(Hg)$$

$$n(Hg(NO_3)_2) = n(Hg) = \frac{41,4}{200} = 0,207$$

$$\omega = \frac{133,76}{200} = 0,67$$

$$m(Hg(NO_3)_2) = 66,242$$

$$m'(Hg(NO_3)_2) = 133,762$$

репробук

$$\varepsilon = \frac{FI}{t} \cdot n = \frac{FI}{t} \cdot \frac{IFt}{nF} = \frac{200}{m+120}$$

$$\varepsilon_t = \frac{200FI}{m+120}$$

$$m = \frac{nFt}{\varepsilon_t} = 41,42$$

$$n = \frac{m}{m+120} = \frac{41,4}{m+120} = \frac{\varepsilon_t}{FI \cdot 3} = \frac{123,3}{m}$$

$$m = \frac{123,3 \cdot FI}{\varepsilon_t} = \frac{123,3 \cdot (m+120)}{200}$$

$$\varepsilon = \frac{nFt}{I}$$

0,639

$$= 200m \cdot 76,7m = 1$$

$$\frac{41,4}{m} = \frac{\varepsilon_t}{FI} \Rightarrow m = \frac{41,4 FI}{\varepsilon_t} \cdot \frac{200}{m+120} = \frac{IFt}{\varepsilon} \cdot \frac{m+120}{200} = \frac{\varepsilon}{IFt}$$

$$\frac{41,4}{m} = \frac{IFt}{\varepsilon} \Rightarrow \frac{41,4 \varepsilon}{IFt \cdot 3} = m = 41,4 \cdot \frac{m+120}{200 \cdot 3}$$

$$\frac{41,4}{m} = \frac{nFt}{I} \Rightarrow m = \frac{41,4 I}{nFt} \cdot \frac{200}{m+120} = \frac{\varepsilon I}{Ft}$$

$$n = \frac{\varepsilon I}{Ft} = \frac{41,4}{m} \Rightarrow m = \frac{41,4 Ft \cdot 3}{\varepsilon I} = \frac{124,2 Ft}{\varepsilon I} = \frac{(m+120) \cdot 124,2}{200} = \frac{m+120}{0,621}$$

0,931

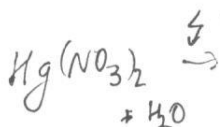
$$\varepsilon = \frac{FtI}{n} \cdot \frac{200}{m+120} = \frac{\varepsilon_t}{FI}$$

0,625

$$\frac{41,4}{m} = \frac{\varepsilon_t}{3 \cdot Ft} = \frac{200}{3 \cdot (m+120)} = \frac{66,7}{m+120} = \frac{124,2 FI}{\varepsilon_t} = m$$

$$m+120 = 1,6m$$

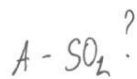
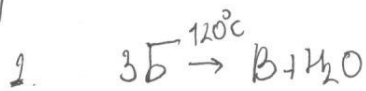
23,166



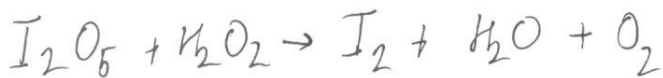
$\varepsilon = 13$

4,34

перевод

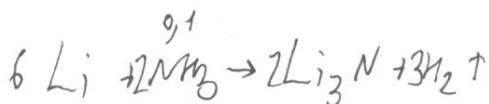
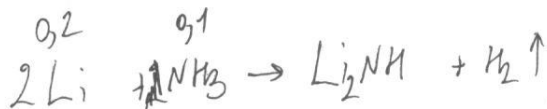
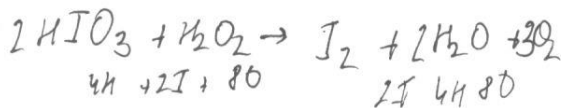
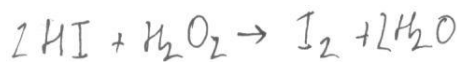


$$\frac{aX}{aX + 16b + 17z} \leq 0,147$$

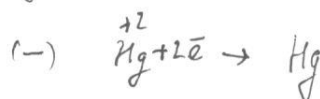
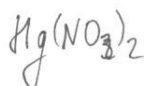
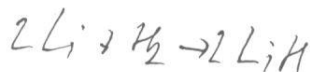
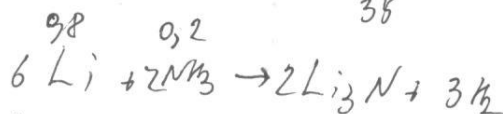
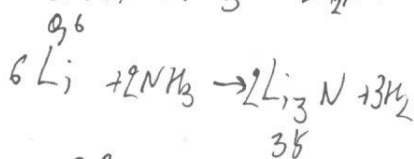
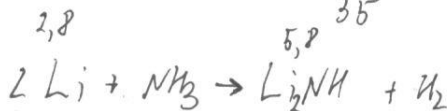
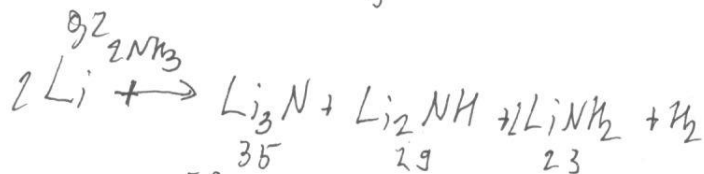


$0,253 \leq$

$$X \leq \frac{47,24b + 2,95z}{a}$$



$0,657$



штовик 1

Задача 2. Постепенно дегидратирующая кислота I_2 . (простое в-во)
По условию В - в-е еще кислоты X_2

$$H_2X_aO_b \cdot \frac{ax}{ax+Z+16b} = 0,747 \text{ (где } X - M(X)) \quad X = \frac{47,24b + 2,95Z}{a}$$

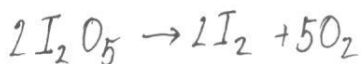
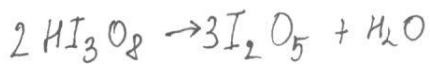
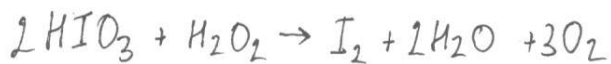
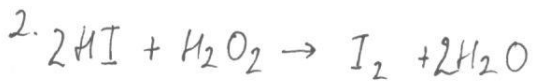
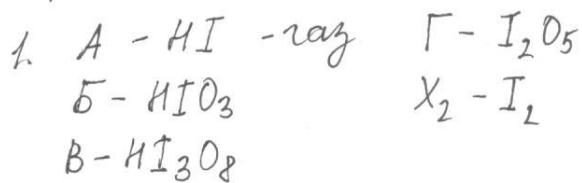
$3B \rightarrow B + H_2O$, выпущено в х.р. $3B \Rightarrow$ оно содержит минимум при атома X

$$X = \frac{47,24b + 2,95Z}{3} = 15,75b + 0,98Z \quad \left| \begin{array}{l} b \leq 8 \\ Z = 1 \end{array} \right. \Rightarrow HI_3O_8 - \text{мезоподная к-та}$$

$$\frac{M(B)}{M(B)} \leq 2,9 \leq \frac{3 \cdot 127 + 1 + 8 \cdot 16}{M(B)}; \quad M(B) = \frac{510}{2,9} = 176; \quad 176 - 127 = 49 \Rightarrow HIO_3$$

По р-ции с H_2O_2 можно сказать, что при $B \xrightarrow{H_2O_2}$, I - окислитель.

а при $A \xrightarrow{H_2O_2}$, I восстановитель.



Часть 2

Олимпиада: **Химия 10 класс (2 часть)**

Шифр: **21300055**

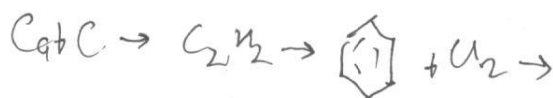
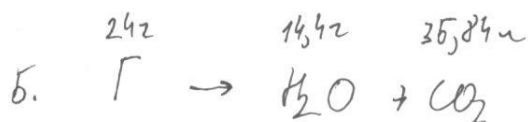
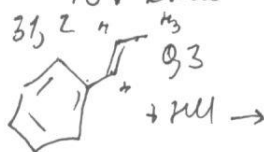
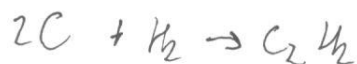
ID профиля: **873970**

Вариант 2

репробук



$$x - 394 + 297 = 1076$$



$$n(H_2O) \leq 0,8 \quad n(CO_2) \leq 1,6$$

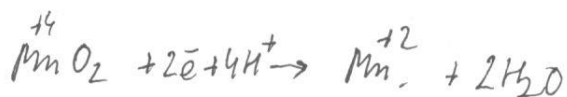
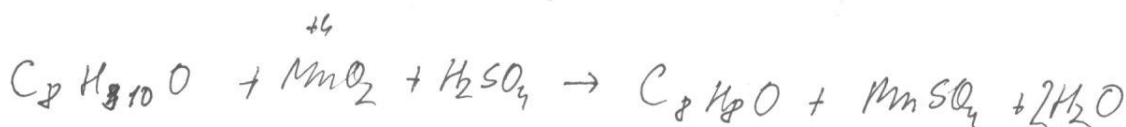
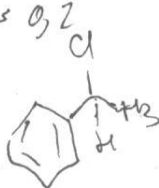
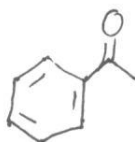
$$n(H) \leq 1,6$$

$$19,2 \quad m(O) \leq 3,2$$

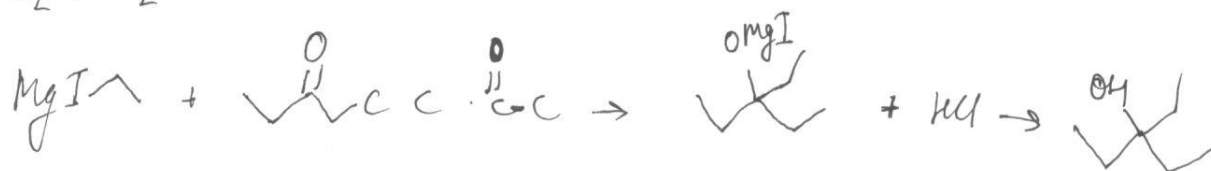
$$n(O) \leq 0,2$$

$$1,6 : 1,6 : 0,2$$

$$8 : 8 : 1$$



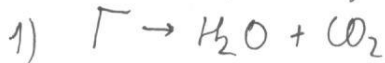
репробук



штовик 1

Задача 5

24г 44,4г 35,84г



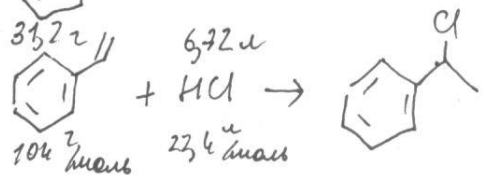
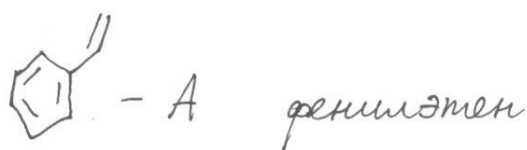
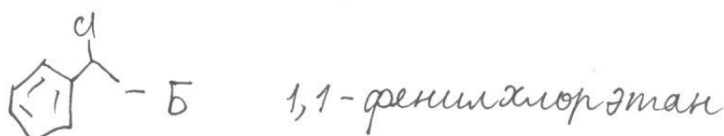
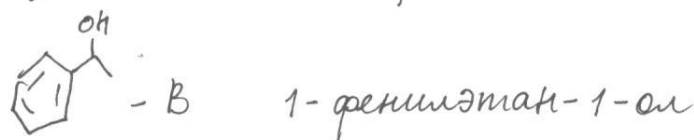
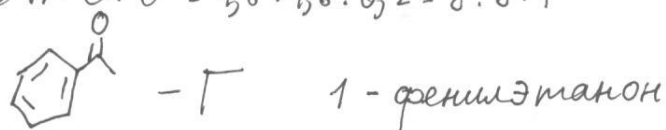
$$n(\text{H}_2\text{O}) = \frac{14,4}{18} = 0,8 \text{ моль} \quad n(\text{CO}_2) = \frac{35,84}{22,4} = 1,6 \text{ моль}$$

$$n(\text{H}) = 1,6 \text{ моль}$$

$$n(\text{C}) = 1,6 \text{ моль}$$

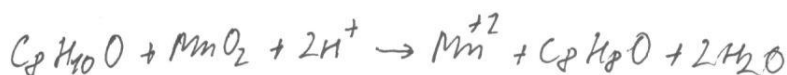
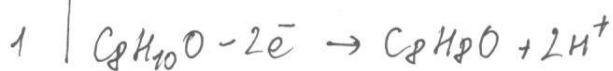
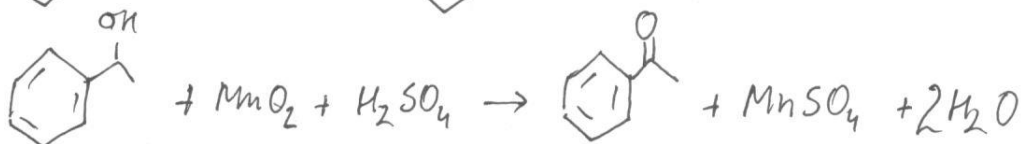
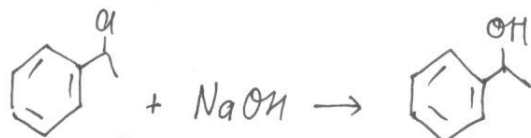
$$n(\text{O}) = 24 - 1,6 \cdot 12 - 1,6 = 3,22 \quad n(\text{O}) = \frac{3,22}{16} = 0,2 \text{ моль}$$

$$n \text{ H:C:O} = 1,6:1,6:0,2 = 8:8:1$$



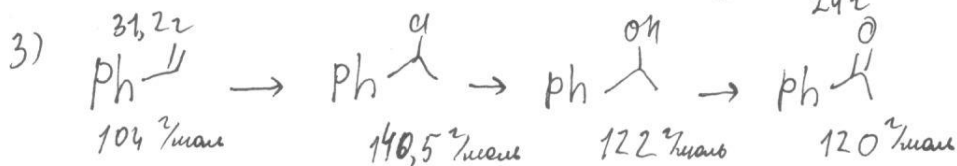
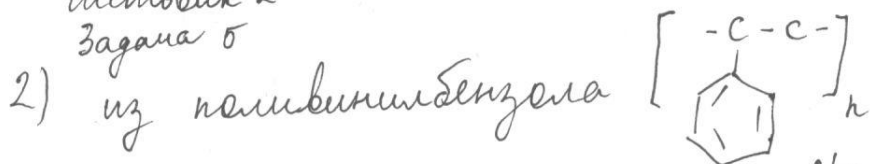
$$n(\text{HCl}) = n(\text{Ph}-\text{CH}=\text{CH}_2)$$

$$\frac{6,72}{22,4} = 0,3; \quad \frac{31,2}{104} = 0,3$$



используем 2

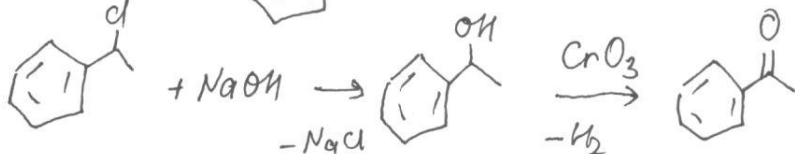
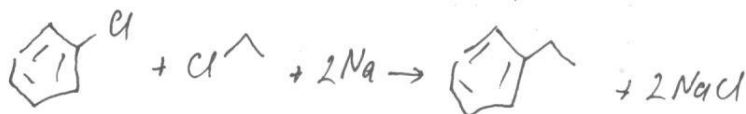
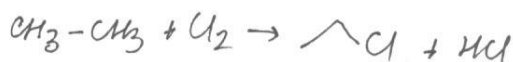
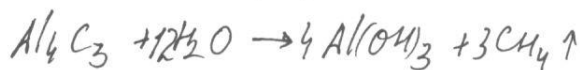
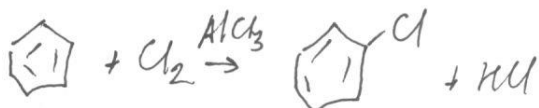
Задача 5



$$n(\text{Ph}-\text{CH}=\text{CH}_2) = n(\text{Ph}-\text{CH}(\text{Cl})-\text{CH}_3) = n(\text{Ph}-\text{CH}(\text{OH})-\text{CH}_3) = n(\text{Ph}-\text{C}(=\text{O})-\text{CH}_3) = \frac{31,22}{104} = 0,3 \text{ моль}$$

$$m(\text{Ph}-\text{C}(=\text{O})-\text{CH}_3) = 120 \cdot 0,3 = 36 \text{ г}$$

$$\omega = \frac{36}{54} = 0,667 = 66,7\%$$



шмтовик 3

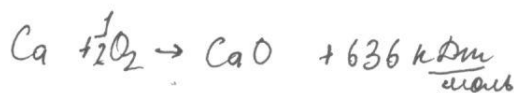
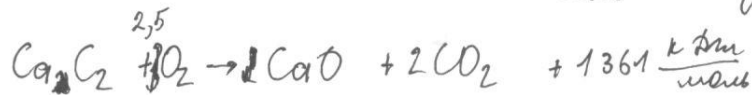
Задача 6



при горении:

$$Q_r = \sum Q_{\text{сгор.}} - \sum Q_{\text{реак.}} = 1076 = Q_{\text{CS}_2} - Q_{\text{CO}_2} - 2Q_{\text{SO}_2} \Rightarrow Q_{\text{CS}_2} = 1076 + Q_{\text{CO}_2} + 2Q_{\text{SO}_2}$$

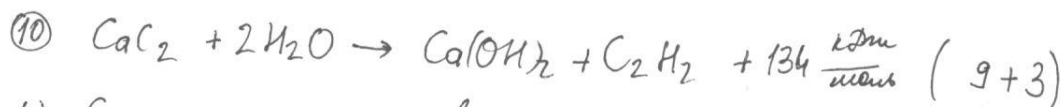
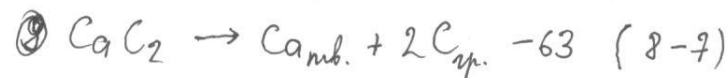
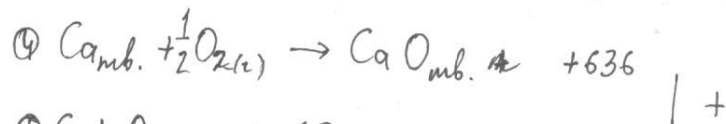
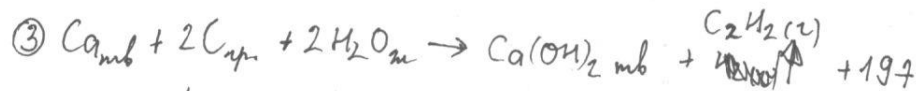
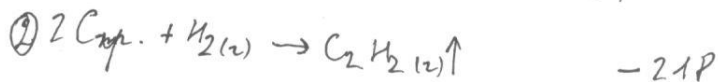
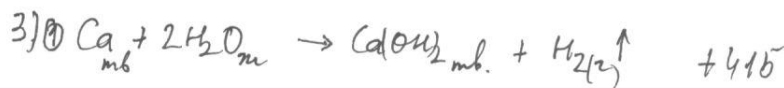
$$\leq 1076 + 394 + 2 \cdot 297 = 2064 \frac{\text{кДж}}{\text{моль}} \quad - \text{экзотерм. экзотерм.}$$



$$Q_r = 1361 - Q(\text{Ca}_2\text{C}_2) - 2Q(\text{CO}_2) - 2Q(\text{CaO}) \Rightarrow Q(\text{Ca}_2\text{C}_2) = 1361 + 2Q_{\text{CO}_2} + 2Q_{\text{CaO}}$$

$$\leq 3421 \frac{\text{кДж}}{\text{моль}} \quad - \text{экзотерм. экзотерм.}$$

2) Карбид кальция. Ограниченная энергия образования.



4) Сероуглерод скорее всего имеет экзотерм. р-цию гидратации, потому что растворяется при нагревании, в случае CaC_2 р-ция экзотерм.

