

Задание 2.1

Дано:

$$m_{\text{вещества}} = 9,4 \text{ г}$$

$$V(\text{CO}_2) = 8,96 \text{ л}$$

$$m(\text{H}_2\text{O}) = 9 \text{ г}$$

$$m(\text{X}) = 15 \text{ г}$$

$$V(\text{NaOH}) = 91 \text{ мл} = 0,091 \text{ л}$$

$$\rho(\text{NaOH}) = 2,45 \text{ г/мл}$$

$$\omega(\text{Na}) = 45\%$$

$$\omega(\text{X}) = ?$$

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Решение:

$$n(\text{C}) = n(\text{CO}_2) = \frac{V}{V_m} = \frac{8,96}{22,4} = 0,4 \text{ моль}$$

$$m(\text{C}) = nM = 0,4 \cdot 12 = 4,8 \text{ г}$$

$$n(\text{H}) = n(\text{H}_2\text{O}) \cdot 2 = \frac{m(\text{H}_2\text{O})}{M} \cdot 2 = \frac{9}{18} \cdot 2 = 1 \text{ моль}$$

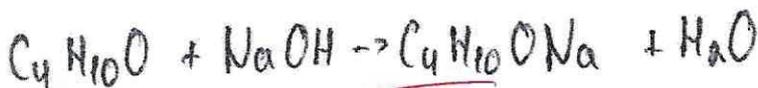
$$m(\text{H}) = 1 \cdot 1 = 1 \text{ г}$$

$$m(\text{O}) = m_{\text{в-ва}} - m(\text{C}) - m(\text{H}) = 9,4 - 4,8 - 1 = 3,6 \text{ г}$$

$$n(\text{O}) = \frac{3,6}{16} = 0,225 \text{ моль}$$

$$n(\text{C}) : n(\text{H}) : n(\text{O}) = 0,4 : 1 : 0,225 = 4 : 10 : 1$$

$\text{C}_4\text{H}_{10}\text{O}$  - молекулярная формула



$$n(\text{NaOH}) = \frac{0,091}{22,4} = 0,0041 \text{ моль}$$

$$n(\text{C}_4\text{H}_{10}\text{O}) = \frac{m}{M} = \frac{15}{74} = 0,2 \text{ моль}$$

$n(\text{NaOH}) = n(\text{C}_4\text{H}_{10}\text{O}) = 0,2 \text{ моль}$ , т.к. нам дано  $n(\text{NaOH}) = 2,45$  - в избытке.

$$m(\text{NaOH}) = nM = 0,2 \cdot 40 = 8 \text{ г}$$

$$m(\text{H}_2\text{O}) = nM = 0,2 \cdot 18 = 3,6 \text{ г}$$

$$m_{\text{р-ра общая}} = m(\text{C}_4\text{H}_{10}\text{O}) + m(\text{NaOH}) + m(\text{H}_2\text{O}) = 15 + 8 + 3,6 = 26,6 \text{ г}$$

$$\omega(\text{C}_4\text{H}_{10}\text{O}) = \frac{m(\text{C}_4\text{H}_{10}\text{O})}{m_{\text{р-ра общая}}} \cdot 100\% = \frac{15}{26,6} \cdot 100\% = 56,39\%$$

Ответ:  $\omega(\text{C}_4\text{H}_{10}\text{O}) = 56,39\%$

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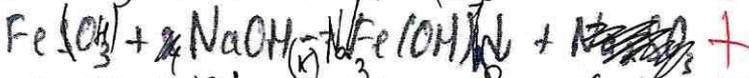
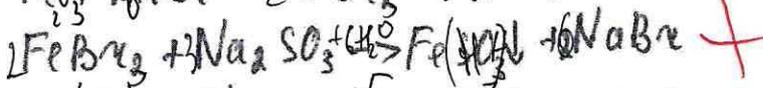
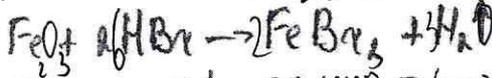
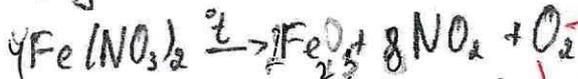


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1	2	3	4	5	6	7	8	9	10
6	8	8			6	12	12		

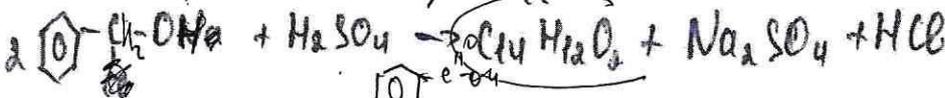
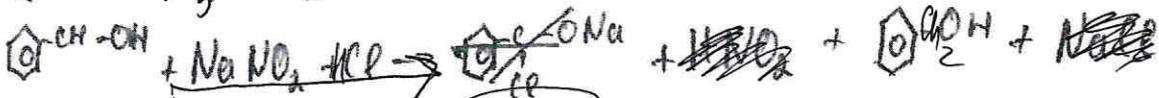
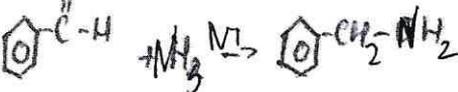
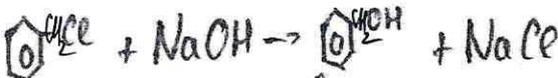
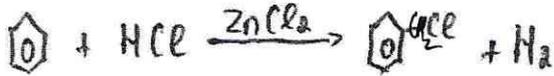
Задание 7.1



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Ответ: ~~х<sub>1</sub> - Fe<sub>2</sub>O<sub>3</sub>, х<sub>2</sub> - FeSO<sub>3</sub>, х<sub>3</sub> - Na<sub>2</sub>SO<sub>3</sub>, х<sub>4</sub> - NaOH~~

Задание 8.1



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Ответ: А -  $\text{C}_6\text{H}_5\text{Cl}$ ; В -  $\text{C}_6\text{H}_5\text{OH}$ ; С -  $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$ .

Задание 6.1

Дано:

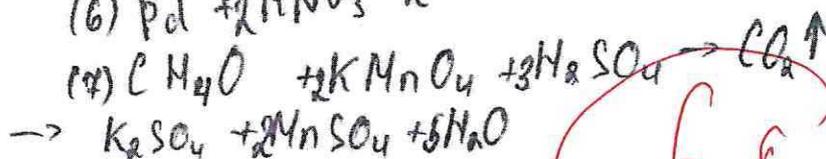
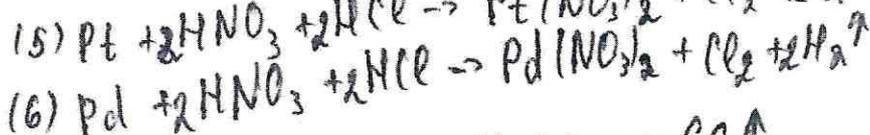
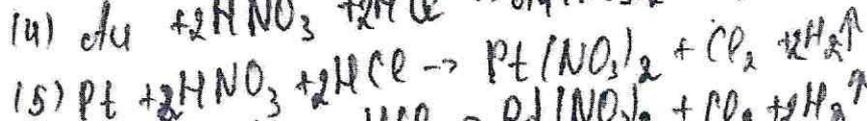
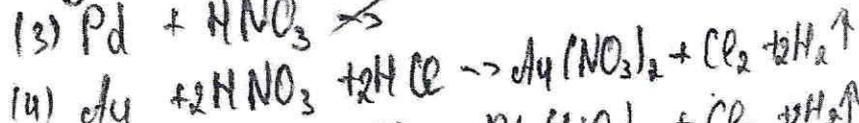
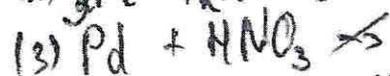
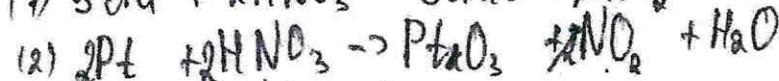
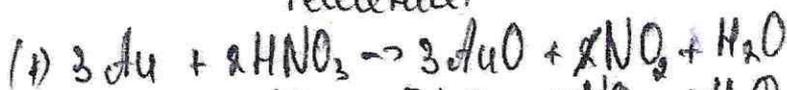
$$V(\text{NO}_2) = 8,34 V(\text{H}_2)$$

$$\rho (\text{сплав}) = 12800 \text{ кг/м}^3$$

$$m (\text{цидрозина}) = 25,6 \text{ г}$$

$\omega$  (металлов) - ?

Решение:



Пусть  $V(\text{H}_2) = x \text{ м}^3$ , тогда  $V(\text{NO}_2) = 8,34 x \text{ м}^3$

$$n (\text{цидрозина}) = \frac{m}{M} = \frac{25,6}{32} = 0,8 \text{ моль}$$

$$V(\text{CO}_2) = n V_m = 0,8 \cdot 22,4 = 17,92 \text{ м}^3$$

$$V(\text{NO}_2) = V(\text{CO}_2) = 17,92 \text{ м}^3 - \text{по условию } n(\text{NO}_2) = \frac{V}{V_m} = \frac{17,92}{22,4} = 0,8 \text{ моль}$$

$$x = \frac{V(\text{NO}_2)}{8,34} = \frac{17,92}{8,34} = 2,14 \text{ м}^3 - V(\text{H}_2)$$

$$n(\text{NO}_2) \cdot 3 = n(\text{Au}) ; n(\text{Au}) = 0,8 \cdot 3 = 2,4 \text{ моль}$$

$$n(\text{Au} + \text{Pt}) = n(\text{NO}_2) \cdot 3 = 2,4 \text{ моль}$$

$$m(\text{Au} + \text{Pt}) = n M = 2,4 \cdot (197 + 195) = 940,8 \text{ кг}$$

$$m(\text{сплав}) = V \rho = 17,92 \cdot 12800 = 229376 \text{ кг}$$

$$\omega (\text{Au} + \text{Pt}) = \frac{m(\text{Au} + \text{Pt})}{m(\text{сплав})} \cdot 100\% = \frac{940,8}{229376} = 0,4\% \approx 40\%$$

$$\omega (\text{Pd}) = 100 - 40 = 60\% ; \omega (\text{Au}) = \frac{40}{2} = 20\% ; \omega (\text{Pt}) = 20\%$$

Ответ:  $\omega (\text{Au}) = 20\%$ ,  $\omega (\text{Pt}) = 20\%$ ,  $\omega (\text{Pd}) = 60\%$



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