

1.

P Ca₃P₂ PH₃ P₂O₅ HPO₃ H₃PO₄ :

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1. $2P + 3Ca = Ca_3P_2$	4
2. $Ca_3P_2 + 6HCl = 3CaCl_2 + 2PH_3$	4
3. $2PH_3 + 4O_2 = P_2O_5 + 3H_2O$	4
4. $P_2O_5 + H_2O = 2HPO_3$	4
5. $HPO_3 + H_2O = H_3PO_4$	4
	20

2.

, 400 0,2
30 36,5 %-

()	
1. $4FeS_x + (8 + 6)/2O_2 = 2Fe_2O_3 + 4 SO_2$	2
$5SO_2 + 2KMnO_4 + 2H_2O = 2K_2SO_4 + MnSO_4 + 2H_2SO_4$	2
2. $KMnO_4, S_2, S:$ $n(KMnO_4) = 0,4 \cdot 0,2 / = 0,08()$; $: n(S_2) : n(KMnO_4) = 5 : 2$, $n(S_2) = 5n(KMnO_4) : 2n(S_2)$; $n(S_2) = (5 \cdot 0,08) : 2 = 0,2 ()$ $n(S) = n(S_2) = 0,2 ()$.	1 1 1
3. $Fe_2O_3 + 6HCl = 2FeCl_3 + 3H_2O$	2
4. $1, Fe_2O_3 Fe:$ $n(HCl) = m/M; m(HCl) = 30 \cdot 0,365 = 10,95 ()$; $n(HCl) = 10,95 : 36,5 / = 0,3$. $n(Fe_2O_3) : n(HCl) = 1 : 6$, $n(Fe_2O_3) = n(HCl) : 6 = 0,3 : 6 = 0,05$. $n(Fe) = 2n(Fe_2O_3) = 0,05 \cdot 2 = 0,1()$.	1 1 1 1

5. $n(\text{Fe}) : n(\text{S}) = 0,1 : 0,2 = 1 : 2$ - FeS_2	2 1
6. $4\text{FeS}_2 + 11 \text{O}_2 = 2\text{Fe}_2\text{O}_3 + 8\text{SO}_2$; $n(\text{FeS}_2) = 2n(\text{Fe}_2\text{O}_3) = 0,05 \cdot 2 = 0,1$ (); $m(\text{FeS}_2) = n \cdot M(\text{FeS}_2)$; $m(\text{FeS}_2) = (0,05 \cdot 2) \cdot 120 / = 12,0$.	2 1 1
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3.

3,74

2,688 (. .).

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1. $\text{Cu} + 4\text{HNO}_3 = \text{Cu}(\text{NO}_3)_2 + 2\text{NO}_2 + 2\text{H}_2\text{O}$ (1) $\text{Ni} + 4\text{HNO}_3 = \text{Ni}(\text{NO}_3)_2 + 2\text{NO}_2 + 2\text{H}_2\text{O}$ (2)	2 2
2. $n(\text{Cu}) = x$ (), $n(\text{Ni}) =$ (),) $- 64 + 59 = 3,74$.) (1) - $n(\text{NO}_2) = 2$,) (2) - $n(\text{NO}_2) = 2$, (NO_2) - $(2 + 2) = 2,688 / 22,4 / = 0,12$.	2 1 2 2 1
3. $64 + 59 = 3,74$ $(2 + 2) = 0,12$, $= 0,04$, $= 0,02$.	2 2
4. $m(\text{Cu}) = 0,04 \cdot 64 / = 2,56$; $m(\text{Ni}) = 0,02 \cdot 59 / = 1,18$.	1 1
5. $(\text{Cu}) = 2,56 / 3,74 = 0,6845$, $68,45\%$ $(\text{Ni}) = 1,18 / 3,74 = 0,3155$, $31,55\%$	1 1
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4.

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2.						3
	BaCl ₂	H ₂ SO ₄	AgNO ₃	HI	KOH	
BaCl ₂				-	-	
H ₂ SO ₄						
AgNO ₃						
HI	-					
KOH	-					
3. 1) H ₂ SO ₄ + BaCl ₂ = BaSO ₄ + 2HCl -						2
2) 2AgNO ₃ + BaCl ₂ = Ba(NO ₃) ₂ + 2AgCl -						2
3) 2AgNO ₃ + H ₂ SO ₄ = Ag ₂ SO ₄ + 2HNO ₃ -						2
4) H ₂ SO ₄ + 2HI = I ₂ + SO ₂ + 2H ₂ O - ()						2
5) 2 OH + H ₂ SO ₄ = ₂ SO ₄ + 2H ₂ O -						2
6) AgNO ₃ + HI = HNO ₃ + AgI -						2
7) HI + KOH = KI + H ₂ O -						2
8) 2AgNO ₃ + 2 = Ag ₂ O + 2 NO ₃ + H ₂ O -						2
						20

5.

1-4.

2-4

(1) (2)

(2).

(1)

3 4.

	(%)	
z (3)	2,00	32,60
z (4)	1,12	35,96

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1 - 4

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2			
3			
4			

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2.	(%) (3) (4). (3): $w(\text{O}) = 100 - (2,00 + 32,6) = 65,4\%$; (4): $w(\text{O}) = 100 - (1,12 + 35,96) = 62,92\%$.		1 1
3.	: (3): $n(\text{H}) : n(\text{O}) = 2,0/1,01 : 65,4/16 = 2 : 4$, O_4 .	(3) –	2
4.	: $w(\text{S}) = \frac{r(\text{S})}{r(\text{S}) + 64 + r(\text{O})} = 0,326$; $A_r(\text{S}) = 32$, S_4 .		1 1
5.	(4): $n(\text{H}) : n(\text{S}) : n(\text{O}) = 1,12/1,01 : 35,96/32 : 62,92/16 = 1,11 : 1,12 : 3,9 = 1 : 1 : 3,5 = 2 : 2 : 7$, S_2O_7 .	(4) –	2 1
6.	(2) (3), S_3 .		1
7.	(1), (2), S_3 .	(1) S_3 .	1
8.	:		1,0 ; 1,0 ; 8 ;
		()	
1.	S_2O_3		
2.	S_3O		
3.	S_4O		
4.	S_2O_7		
			20