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 , 2003. 15 .

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©

, 2003

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2003

Ag –	N –
As – ,	Ni –
Au –	O – ,

C – ,	Pb –
Cu –	S –
Fe –	Sb –
H – ,	Si – , ,
Hg –	Sn –
Mn –	

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–
:

Mg – ()	O ₃ –
Hg – ()	P ₄ –
O ₂ –	S ₈ –

:

1 –	7 –
2 –	8 –
3 –	9 –
4 –	10 –
5 –	11 –
6 –	12 –

n – .

, , 3 – , 4 – .

()

— (, CuSO₄ (Cu²⁺ —) , SO₄²⁻) PCl₃ (P^{+III} — , Cl^{-I} —).

· (—)
 (—),
 :

CuSO₄ — (II)

PCl₃ —

LaCl₃ — (III)

—

(—), (—)
 (—)
 (—),

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:

H ₂ F ⁺ —	C ₂ ²⁻ —
H ₃ O ⁺ —	CN ⁻ —
H ₃ S ⁺ —	CNO ⁻ —
NH ₄ ⁺ —	HF ₂ ⁻ —
N ₂ H ₅ ⁺ — (1+)	HO ₂ ⁻ —
N ₂ H ₆ ⁺ — (2+)	HS ⁻ —
NH ₃ OH ⁺ —	N ₃ ⁻ —
NO ⁺ —	NCS ⁻ —
NO ₂ ⁺ —	O ₂ ²⁻ —
O ₂ ⁺ —	O ₂ ⁻ —

$\text{PH}_4^+ -$	$\text{O}_3^- -$
$\text{VO}_2^+ -$	$\text{OCN}^- -$
$\text{UO}_2^+ -$	$\text{OH}^- -$

:

$\text{AsH}_3 -$	$\text{HN}_3 -$
$\text{B}_2\text{H}_6 -$	$\text{H}_2\text{S} -$
$\text{B}_4\text{H}_{10} -$ (10)	$\text{NH}_3 -$
$\text{HCN} -$	$\text{N}_2\text{H}_4 -$
$\text{HCl} -$	$\text{NH}_2\text{OH} -$
$\text{HF} -$	$\text{PH}_3 -$
$\text{HI} -$	$\text{SiH}_4 -$

1.

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— ,
 ()
 ; ()_n , $n = 1 \div 6$.
 ()_n - ; $n > 2$
 — , ()₃ () ,
 ()₄ ()₆ 2()₂.

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— ,
 HNO_3 H_2CO_3 , $\text{SO}_2(\text{OH})_2$, $\text{NO}_2(\text{OH})$ $\text{CO}(\text{OH})_2$. H_2SO_4 ,

—

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“ ”
 “ ”
 (,):

$\text{HAsO}_2 -$	$\text{AsO}_2^- -$
$\text{H}_3\text{AsO}_3 -$	$\text{AsO}_3^{3-} -$
$\text{H}_3\text{AsO}_4 -$	$\text{AsO}_4^{3-} -$
$-$	$4 \quad 7^{2-} -$
$-$	$\text{i} \quad 3^- -$
$\text{HBrO} -$	$\text{BrO}^- -$
$\text{HBrO}_3 -$	$\text{BrO}_3^- -$
$\text{H}_2\text{CO}_3 -$	$\text{CO}_3^{2-} -$
$\text{HClO} -$	$\text{ClO}^- -$
$\text{HClO}_2 -$	$\text{ClO}_2^- -$
$\text{HClO}_3 -$	$\text{ClO}_3^- -$
$\text{HClO}_4 -$	$\text{ClO}_4^- -$
$\text{H}_2\text{CrO}_4 -$	$\text{CrO}_4^{2-} -$
$-$	$\text{CrO}_4^- -$
$\text{H}_2\text{Cr}_2 \quad 7 -$	$\text{Cr}_2\text{O}_7^{2-} -$
$-$	$\text{FeO}_4^{2-} -$
$\text{HIO}_3 -$	$\text{IO}_3^- -$
$\text{HIO}_4 -$	$\text{IO}_4^- -$

$\text{H}_5\text{IO}_6 -$	$\text{IO}_6^{5-} -$
$\text{HMnO}_4 -$	$\text{MnO}_4^- -$
$-$	$\text{MnO}_4^{2-} -$
$-$	$\text{M O}_4^{2-} -$
$\text{HNO}_2 -$	$\text{NO}_2^- -$
$\text{HNO}_3 -$	$\text{NO}_3^- -$
$\text{HPO}_3 -$	$\text{PO}_3^- -$
$\text{H}_3\text{PO}_4 -$	$\text{PO}_4^{3-} -$
	$\text{PO}_4^{2-} -$
	$_2\text{PO}_4^- -$
$\text{H}_4\text{P}_2\text{O}_7 -$	$\text{P}_2\text{O}_7^{4-} -$
$-$	$\text{ReO}_4^- -$
$-$	$\text{SO}_3^{2-} -$
	$\text{HSO}_3^- -$
$\text{H}_2\text{SO}_4 -$	$\text{SO}_4^{2-} -$
$-$	$\text{SO}_4^- -$
$\text{H}_2\text{S}_2\text{O}_7 -$	$\text{S}_2\text{O}_7^{2-} -$
$\text{H}_2\text{S}_2\text{O}_6(\text{O}_2) -$	$\text{S}_2\text{O}_6(\text{O}_2)^{2-} -$
$\text{H}_2\text{SO}_3\text{S} -$	$\text{SO}_3\text{S}^{2-} -$
$\text{H}_2\text{SeO}_3 -$	$\text{SeO}_3^{2-} -$
$\text{H}_2\text{SeO}_4 -$	$\text{SeO}_4^{2-} -$
$\text{H}_2\text{SiO}_3 -$	$\text{SiO}_3^{2-} -$
$\text{H}_4\text{SiO}_4 -$	$\text{SiO}_4^{4-} -$
$\text{H}_2\text{TeO}_3 -$	$\text{TeO}_3^{2-} -$

$\text{H}_2\text{TeO}_4 -$	$\text{TeO}_4^{2-} -$
$\text{H}_6\text{TeO}_6 -$	$\text{TeO}_6^{6-} -$
$-$	$\text{VO}_3^- -$
$-$	$\text{VO}_4^{3-} -$
$-$	$\text{WO}_4^{3-} -$

, :

$\text{IO}_4^{2-} -$	(2-)	$\text{SO}_2^{2-} -$	(IV)
$\text{MoO}_3^{2-} -$	(IV)	$\text{TeO}_5^{2-} -$	(IV)
$\text{PoO}_3^{2-} -$	(IV)	$\text{XeO}_6^{4-} -$	(VIII)

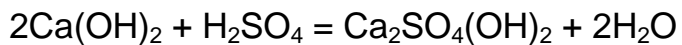
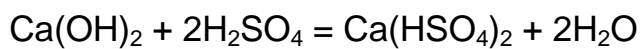
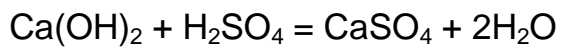
.

- ,

$(\quad)_n, \quad n = 1, 2 (\quad 3, 4) \quad n$
 $+$ - ;
 :

$\text{NaOH} -$	$\text{Ba(OH)}_2 -$
$\text{KOH} -$	$\text{La(OH)}_3 -$ (III)

(), :



— , $n+$

* .

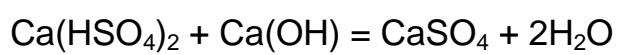
()_n , —

— () — ;

:

Ca ₃ (PO ₄) ₂	—
Ca(H ₂ PO ₄) ₂	—
CaHPO ₄	—
CuCO ₃	— (II)
Cu ₂ CO ₃ (OH) ₂	— -
La(NO ₃) ₃	— (III)
Ti(NO ₃) ₂ O	— -

, :



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, :

KAl(SO ₄) ₂	— -
CaMg(CO ₃) ₂	— -

2.

— :

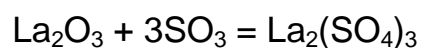
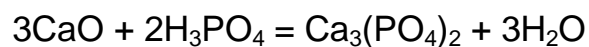
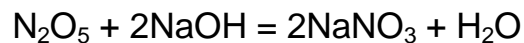
H ₂ SO ₄ — — → SO ₃	H ₂ CO ₃ — — → CO ₂
--	--

– H ₂ O	– H ₂ O
NaOH — — → Na ₂ O	Ca(OH) ₂ — — → CaO
– H ₂ O	– H ₂ O

(SO₃, CO₂), (H₂SO₄, H₂CO₃) (NaOH, Ca(OH)₂) –
 (Na₂O, CaO),
 :

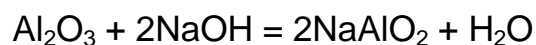
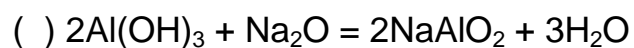
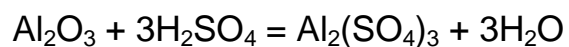
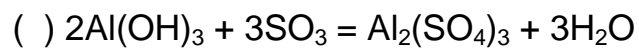
SO ₃ –	Na ₂ O –
N ₂ O ₅ –	La ₂ O ₃ – (III)
P ₄ O ₁₀ –	ThO ₂ – (IV)

:

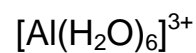
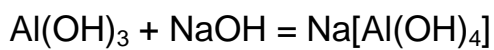
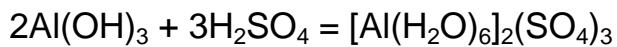


3.

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BeO —	FeO — (II)
Al ₂ O ₃ —	Fe ₂ O ₃ — (III)
SnO — (II)	MnO ₂ — (IV)
SnO ₂ — (IV)	ZnO — (II)



Be(OH) ₂	—
Al(OH) ₃	—
AlO(OH)	—

(
H₂O, KBr, H₂S, Cs₂(S₂), N₂O, NH₃, HN₃, CaC₂, SiH₄),

(
CSO, IO₂F₃, SBrO₂F, CrO(O₂)₂, PSl₃, (CaTi)O₃,
(FeCu)S₂, Hg(CN)₂, (PF₃)₂O, VCl₂(NH₂). , CSO
CS₂,

OF ₂ –	K ₂ O ₂ –
HgCl ₂ – (II)	Na ₂ S –
Hg ₂ Cl ₂ –	Mg ₃ N ₂ –
SBr ₂ O – -	NH ₄ Br –
N ₂ O –	Pb(N ₃) ₂ – (II)
NO ₂ –	CaC ₂ –

,
CO, NO, NO₂, (Fe^{II}Fe^{III})O₄,
(
NO
N),
N^{II}, N^{III} N^{IV}.

$(\text{Fe}^{\text{II}}\text{Fe}_2^{\text{III}})\text{O}_4 -$

(III)- (II)

— , , , .

NH_4Cl , $\text{Pb}(\text{N}_3)_2$, , AgF , KBr , Na_2S , $\text{Ba}(\text{HS})_2$, NaCN , ,

, ().

$_2\text{S}$, CN N_3 . F , Cl , Br ,

$\text{F}(\text{aqua}) -$, $_2\text{S}(\text{aqua}) -$,
— .