

4.

103,7 /
 511
 393,5 / 3
 241,8

()	
$2 + [(2 +):2]O_2 = xCO_2 + yH_2O$	1
$m(CO_2) = 3m()$ $44 = 3 \cdot (12 + 2), 8 = 6, : = 6:8 = 3:4$	2
(- 3 8, 6 16 . . , 5-6 nH_{2n+2}).	1
$3 \cdot 8 + 5 \cdot 2 = 3CO_2 + 4H_2O$	2
1) $3 + 4 \cdot 2 = 3 \cdot 8 \quad Q_1 = 103,7 /$ 2) $3 + 3 \cdot 2 = 3CO_2 \quad Q_2 = 3 \cdot 393,5 / = 1180,5 /$ 3) $4H_2 + 2 \cdot 2 = 4H_2O \quad Q_3 = 4 \cdot 241,8 / = 967,2 /$ $Q = (Q_2 + Q_3) - Q_1 = (1180,5 + 967,2) - 103,7 = 2044 (/)$	1 1 1 3
$\frac{1}{511}, \frac{2044}{44} / , 511:2044 = 0,25 ()$ $44 / \cdot 0,25 = 11$	2 1
	20

5.

: $Zn^{2+}, Al^{3+}, Mn^{2+}, Pb^{2+}, Fe^{3+}, Cr^{3+}$.

	Pb^{2+}	Zn^{2+}	Al^{3+}	Mn^{2+}	Fe^{3+}	Cr^{3+}
NH₄OH					-	-
NaOH					-	
HCl		-	-	-	-	-

(,)	
$\text{Pb}^{2+} + 2\text{NH}_4\text{OH} = \text{Pb}(\text{OH})_2 + 2\text{NH}_4^+$	1
$\text{Zn}^{2+} + 4\text{NH}_4\text{OH}(\quad) = [\text{Zn}(\text{NH}_3)_4]^{2+} + 4\text{H}_2\text{O}$	1
$\text{Al}^{3+} + 3\text{NH}_4\text{OH} = \text{Al}(\text{OH})_3 + 3\text{NH}_4^+$	1
$\text{Mn}^{2+} + 2\text{NH}_4\text{OH} = \text{Mn}(\text{OH})_2 + 2\text{NH}_4^+$	1
$2\text{Mn}(\text{OH})_2 + \text{O}_2 = 2\text{MnO}_2 + 2\text{H}_2\text{O}$ $2\text{Mn}(\text{OH})_2 + \text{O}_2 = 2\text{MnO}(\text{OH})_2$	1
$\text{Fe}^{3+} + 3\text{NH}_4\text{OH} = \text{Fe}(\text{OH})_3 + 3\text{NH}_4^+$	1
$\text{Cr}^{3+} + 3\text{NH}_4\text{OH} = \text{Cr}(\text{OH})_3 + 3\text{NH}_4^+$	1
$\text{Pb}^{2+} + 2\text{NaOH} = \text{Pb}(\text{OH})_2 + 2\text{Na}^+$	1
$\text{Pb}(\text{OH})_2 + 2\text{NaOH}(\quad) = \text{Na}_2[\text{Pb}(\text{OH})_4]$	1
$\text{Zn}^{2+} + 2\text{NaOH} = \text{Zn}(\text{OH})_2 + 2\text{Na}^+$	1
$\text{Zn}(\text{OH})_2 + 2\text{NaOH}(\quad) = \text{Na}_2[\text{Zn}(\text{OH})_4]$	1
$\text{Al}^{3+} + 3\text{NaOH} = \text{Al}(\text{OH})_3 + 3\text{Na}^+$	1
$\text{Al}(\text{OH})_3 + \text{NaOH}(\quad) = \text{Na}[\text{Al}(\text{OH})_4]$	1
$\text{Al}(\text{OH})_3 + 3\text{NaOH}(\quad) = \text{Na}_3[\text{Al}(\text{OH})_6]$	
$\text{Mn}^{2+} + 2\text{NaOH} = \text{Mn}(\text{OH})_2 + 2\text{Na}^+$	1
$2\text{Mn}(\text{OH})_2 + \text{O}_2 = 2\text{MnO}_2 + 2\text{H}_2\text{O}$ $2\text{Mn}(\text{OH})_2 + \text{O}_2 = 2\text{MnO}(\text{OH})_2$	1
$\text{Cr}^{3+} + 3\text{NaOH} = \text{Cr}(\text{OH})_3 + 3\text{Na}^+$	1
$\text{Cr}(\text{OH})_3 + \text{NaOH} = \text{Na}[\text{Cr}(\text{OH})_4]$	1
$\text{Pb}^{2+} + 2\text{HCl} = \text{PbCl}_2 + 2\text{H}^+$	1
	2
	20