

ĐÁP ÁN VÀ HƯỚNG DẪN GIẢI CHƯƠNG VI

6.1 D	6.2 D	6.3 A	6.4 A	6.5 A	6.6 A	6.7 B	6.8 B	6.9 D	6.10 A
6.11 A	6.12 B	6.13 C	6.14 C	6.15 A	6.16 A	6.17 D	6.18 A	6.19 B	6.20 A
6.21 A	6.22 C	6.23 C	6.24 C	6.25 C	6.26 B	6.27 A	6.28 A	6.29 B	6.30 C
6.31 A	6.32 D	6.33 C	6.34 B	6.35 A	6.36 C	6.37 C	6.38 A	6.39 A	6.40 C
6.41 D	6.42 A	6.43 B	6.44 C	6.45 B	6.46 B	6.47 A	6.48 A	6.49 B	6.50 A
6.51 C	6.52 B	6.53 A	6.54 D	6.55 D	6.56 D	6.57 A	6.58 B	6.59 C	6.60 D
6.61 A	6.62 A	6.63 D	6.64 A	6.65 B	6.66 C	6.67 D	6.68 D	6.69 B	6.70 A
6.71 A	6.72 B	6.73 A	6.74 A	6.75 C	6.76 A	6.77 A	6.78 A	6.79 B	6.80 A
6.81 C	6.82 A	6.83 A	6.84 A	6.85 A	6.86 A	6.87 A	6.88 B	6.89 B	6.90 B
6.91 A	6.92 C	6.93 A	6.94 C	6.95 A	6.96 A	6.97 A	6.98 B	6.99 B	6.100 A
6.101 A	6.102 A	6.103 A	6.104 A	6.105 A					

CHƯƠNG VII. CROM – SẮT – ĐỒNG VÀ HỢP CHẤT

A – MỘT SỐ VẤN ĐỀ LÝ THUYẾT CẦN NẮM VỮNG

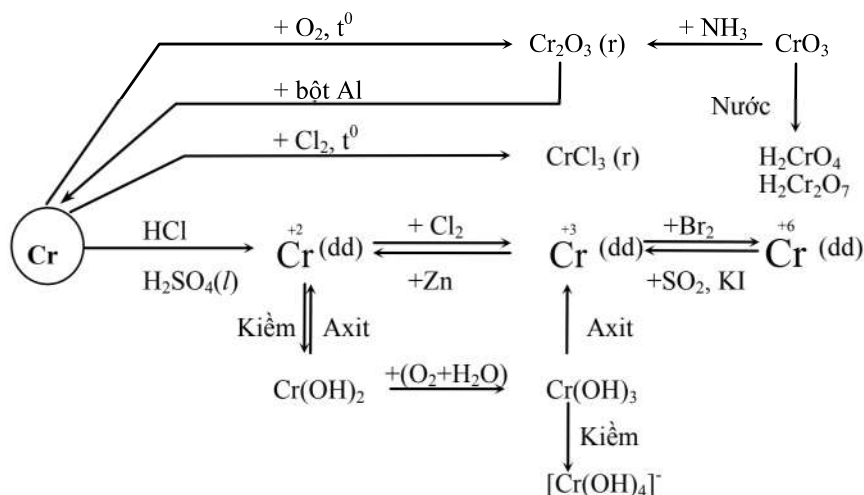
1. Crom – Sắt – Đồng

- Cấu hình electron nguyên tử Cr : $[Ar]3d^54s^1$; Fe : $[Ar]3d^64s^2$, Cu : $[Ar]3d^{10}4s^1$.

- Thế điện cực chuẩn $E_{Cr^{3+}/Cr}^0 = -0,74V$; $E_{Fe^{2+}/Fe}^0 = -0,44V$; $E_{Fe^{3+}/Fe^{2+}}^0 = 0,77V$,

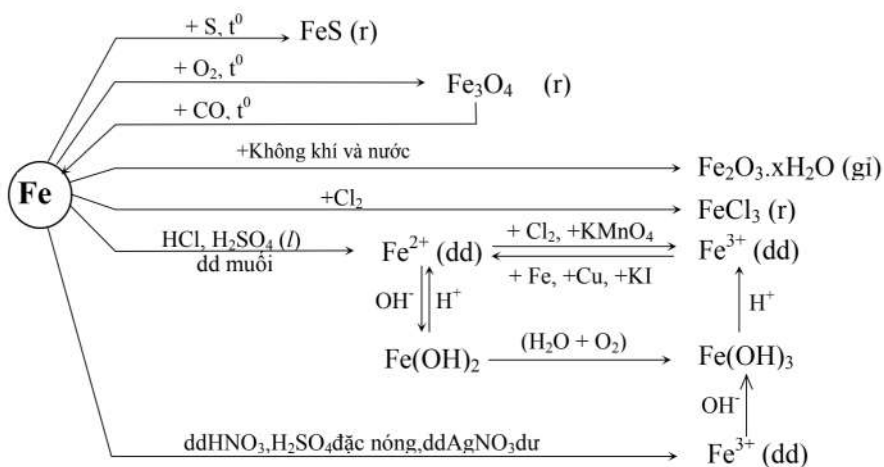
$E_{Cu^{2+}/Cu}^0 = 0,34V$.

2. Sơ đồ minh họa tính chất hoá học của crom



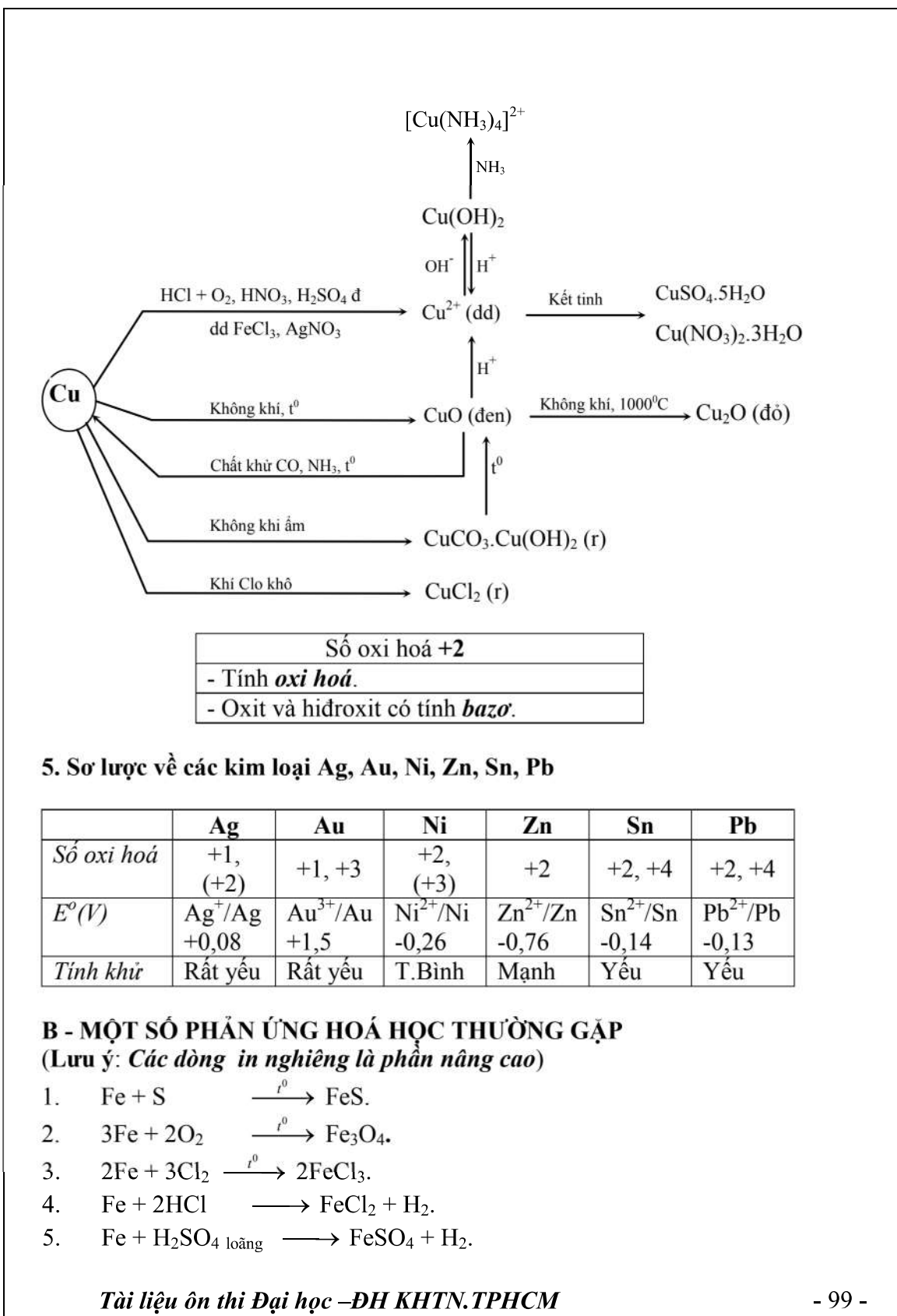
Số oxi hoá +2	Số oxi hoá +3	Số oxi hoá +6
- Tính <i>khử</i> .	- Tính <i>khử</i> và tính <i>oxi hoá</i> .	- Tính <i>oxi hoá</i> .
- Oxit và hidroxit có tính <i>bazơ</i> .	- Oxit và hidroxit có tính <i>lưỡng tính</i> .	- Oxit và hidroxit có tính <i>axit</i> .

3. Sơ đồ minh họa tính chất hoá học của sắt và hợp chất



Số oxi hoá +2	Số oxi hoá +3
- Tính <i>khử</i> .	- Tính <i>oxi hoá</i> .
- Oxit và hidroxit có tính <i>bazơ</i> .	- Oxit và hidroxit có tính <i>bazơ</i> .

4. Sơ đồ minh họa tính chất hoá học đồng



6. $2\text{Fe} + 6\text{H}_2\text{SO}_4 \text{ đặc} \xrightarrow{t^0} \text{Fe}_2(\text{SO}_4)_3 + 3\text{SO}_2 + 6\text{H}_2\text{O}$.
7. $\text{Fe} + 4\text{HNO}_3 \text{ loãng} \longrightarrow \text{Fe}(\text{NO}_3)_3 + \text{NO} + 2\text{H}_2\text{O}$.
8. $\text{Fe} + 6\text{HNO}_3 \text{ đặc} \longrightarrow \text{Fe}(\text{NO}_3)_3 + 3\text{NO}_2 + 3\text{H}_2\text{O}$.
9. $\text{Fe} \text{ (dư)} + \text{HNO}_3 \longrightarrow \text{Fe}(\text{NO}_3)_2 + \dots$
10. $\text{Fe} \text{ (dư)} + \text{H}_2\text{SO}_4 \text{ (đặc)} \longrightarrow \text{FeSO}_4 + \dots$
11. $\text{Fe} + \text{CuSO}_4 \longrightarrow \text{FeSO}_4 + \text{Cu}$.
12. $\text{Fe} + 2\text{AgNO}_3 \longrightarrow \text{Fe}(\text{NO}_3)_2 + 2\text{Ag}$.
13. $\text{Fe} + 3\text{AgNO}_3 \text{ (dư)} \longrightarrow \text{Fe}(\text{NO}_3)_3 + \dots$
14. $3\text{Fe} + 4\text{H}_2\text{O} \xrightarrow{<570^0\text{C}} \text{Fe}_3\text{O}_4 + 4\text{H}_2$.
15. $\text{Fe} + \text{H}_2\text{O} \xrightarrow{>570^0\text{C}} \text{FeO} + \text{H}_2$.
16. $3\text{FeO} + 10\text{HNO}_3 \text{ đặc} \xrightarrow{t^0} 3\text{Fe}(\text{NO}_3)_3 + \text{NO} + 5\text{H}_2\text{O}$.
17. $2\text{FeO} + 4\text{H}_2\text{SO}_4 \text{ đặc} \xrightarrow{t^0} \text{Fe}_2(\text{SO}_4)_3 + \text{SO}_2 + 4\text{H}_2\text{O}$.
18. $\text{FeO} + \text{H}_2\text{SO}_4 \text{ loãng} \longrightarrow \text{FeSO}_4 + \text{H}_2\text{O}$.
19. $\text{FeO} + 2\text{HCl} \longrightarrow \text{FeCl}_2 + \text{H}_2\text{O}$.
20. $\text{FeO} + \text{CO} \xrightarrow{t^0} \text{Fe} + \text{CO}_2$.
21. $\text{Fe}(\text{OH})_2 + 2\text{HCl} \longrightarrow \text{FeCl}_2 + 2\text{H}_2\text{O}$.
22. $\text{Fe}(\text{OH})_2 + \text{H}_2\text{SO}_4 \longrightarrow \text{FeSO}_4 + 2\text{H}_2\text{O}$.
23. $4\text{Fe}(\text{OH})_2 + \text{O}_2 + 2\text{H}_2\text{O} \longrightarrow 4\text{Fe}(\text{OH})_3$.
24. $\text{FeCl}_2 + 2\text{NaOH} \longrightarrow \text{Fe}(\text{OH})_2 + 2\text{NaCl}$.
25. $2\text{FeCl}_2 + \text{Cl}_2 \longrightarrow 2\text{FeCl}_3$.
26. $10\text{FeSO}_4 + 2\text{KMnO}_4 + 8\text{H}_2\text{SO}_4 \longrightarrow 5\text{Fe}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4 + 2\text{MnSO}_4 + 8\text{H}_2\text{O}$.
27. $3\text{Fe}_2\text{O}_3 + \text{CO} \xrightarrow{t^0} 2\text{Fe}_3\text{O}_4 + \text{CO}_2$.
28. $\text{Fe}_2\text{O}_3 + \text{CO} \xrightarrow{t^0} 2\text{FeO} + \text{CO}_2$.
29. $\text{Fe}_2\text{O}_3 + 3\text{CO} \xrightarrow{t^0} 2\text{Fe} + 3\text{CO}_2$.
30. $\text{Fe}_2\text{O}_3 + 3\text{H}_2\text{SO}_4 \text{ loãng} \longrightarrow \text{Fe}_2(\text{SO}_4)_3 + 3\text{H}_2\text{O}$.
31. $\text{Fe}_2\text{O}_3 + 6\text{HCl} \longrightarrow 2\text{FeCl}_3 + 3\text{H}_2\text{O}$.
32. $\text{Fe}_2\text{O}_3 + 3\text{H}_2\text{SO}_4 \longrightarrow \text{Fe}_2(\text{SO}_4)_3 + 3\text{H}_2\text{O}$.
33. $\text{FeCl}_3 + 3\text{NaOH} \longrightarrow \text{Fe}(\text{OH})_3 + 3\text{NaCl}$.
34. $2\text{FeCl}_3 + \text{Fe} \longrightarrow 3\text{FeCl}_2$.
35. $2\text{FeCl}_3 + \text{Cu} \longrightarrow 2\text{FeCl}_2 + \text{CuCl}_2$.
36. $2\text{FeCl}_3 + 2\text{KI} \longrightarrow 2\text{FeCl}_2 + 2\text{KCl} + \text{I}_2$.
37. $2\text{Fe}(\text{OH})_3 \xrightarrow{t^0} \text{Fe}_2\text{O}_3 + 3\text{H}_2\text{O}$.
38. $2\text{Fe}(\text{OH})_3 + 3\text{H}_2\text{SO}_4 \longrightarrow \text{Fe}_2(\text{SO}_4)_3 + 6\text{H}_2\text{O}$.

39. $\text{Fe(OH)}_3 + 3\text{HCl} \longrightarrow \text{FeCl}_3 + 3\text{H}_2\text{O}$.
40. $2\text{FeS}_2 + 14\text{H}_2\text{SO}_4 \longrightarrow \text{Fe}_2(\text{SO}_4)_3 + 15\text{SO}_2 + 14\text{H}_2\text{O}$.
41. $4\text{FeS}_2 + 11\text{O}_2 \xrightarrow{t^0} 2\text{Fe}_2\text{O}_3 + 8\text{SO}_2$.
42. $4\text{Cr} + 3\text{O}_2 \xrightarrow{t^0} 2\text{Cr}_2\text{O}_3$.
43. $2\text{Cr} + 3\text{Cl}_2 \xrightarrow{t^0} 2\text{CrCl}_3$.
44. $2\text{Cr} + 3\text{S} \xrightarrow{t^0} \text{Cr}_2\text{S}_3$.
45. $\text{Cr} + 2\text{HCl} \longrightarrow \text{CrCl}_2 + \text{H}_2$.
46. $\text{Cr} + \text{H}_2\text{SO}_4 \longrightarrow \text{CrSO}_4 + \text{H}_2$.
47. $2\text{Cr} + 3\text{SnCl}_2 \longrightarrow 2\text{CrCl}_3 + 3\text{Sn}$.
48. $4\text{Cr(OH)}_2 + \text{O}_2 + 2\text{H}_2\text{O} \xrightarrow{t^0} 4\text{Cr(OH)}_3$.
49. $\text{Cr(OH)}_2 + 2\text{HCl} \longrightarrow \text{CrCl}_2 + 2\text{H}_2\text{O}$.
50. $\text{Cr(OH)}_3 + \text{NaOH} \longrightarrow \text{Na[Cr(OH)}_4] \text{ (hay NaCrO}_2\text{)}$.
51. $\text{Cr(OH)}_3 + 3\text{HCl} \longrightarrow \text{CrCl}_3 + 3\text{H}_2\text{O}$.
52. $2\text{Cr(OH)}_3 \xrightarrow{t^0} \text{Cr}_2\text{O}_3 + 3\text{H}_2\text{O}$.
53. $2\text{CrO} + \text{O}_2 \xrightarrow{>100^0\text{C}} 2\text{Cr}_2\text{O}_3$.
54. $\text{CrO} + 2\text{HCl} \longrightarrow \text{CrCl}_2 + \text{H}_2\text{O}$.
55. $\text{Cr}_2\text{O}_3 + 3\text{H}_2\text{SO}_4 \longrightarrow \text{Cr}_2(\text{SO}_4)_3 + 3\text{H}_2\text{O}$.
56. $2\text{Cr}_2\text{O}_3 + 8\text{NaOH} + 3\text{O}_2 \longrightarrow 4\text{Na}_2\text{CrO}_4 + 4\text{H}_2\text{O}$.
57. $\text{Cr}_2\text{O}_3 + 2\text{Al} \xrightarrow{t^0} 2\text{Cr} + \text{Al}_2\text{O}_3$.
58. $\text{CrO}_3 + \text{H}_2\text{O} \longrightarrow \text{H}_2\text{CrO}_4$.
59. $2\text{CrO}_3 + \text{H}_2\text{O} \longrightarrow \text{H}_2\text{Cr}_2\text{O}_7$.
60. $4\text{CrO}_3 \xrightarrow{420^0\text{C}} 2\text{Cr}_2\text{O}_3 + 3\text{O}_2$.
61. $2\text{CrO}_3 + 2\text{NH}_3 \longrightarrow \text{Cr}_2\text{O}_3 + \text{N}_2 + 3\text{H}_2\text{O}$.
62. $4\text{CrCl}_2 + \text{O}_2 + 4\text{HCl} \longrightarrow 4\text{CrCl}_3 + 2\text{H}_2\text{O}$.
63. $\text{CrCl}_2 + 2\text{NaOH} \longrightarrow \text{Cr(OH)}_2 + 2\text{NaCl}$.
64. $2\text{CrCl}_2 + \text{Cl}_2 \longrightarrow 2\text{CrCl}_3$.
65. $2\text{CrCl}_3 + \text{Zn} \longrightarrow \text{ZnCl}_2 + 2\text{CrCl}_2$.
66. $\text{CrCl}_3 + 3\text{NaOH} \longrightarrow \text{Cr(OH)}_3 + 3\text{NaCl}$.
67. $2\text{CrCl}_3 + 3\text{Cl}_2 + 16\text{NaOH} \longrightarrow 2\text{Na}_2\text{CrO}_4 + 12\text{NaCl} + 8\text{H}_2\text{O}$.
68. $2\text{NaCrO}_2 + 3\text{Br}_2 + 8\text{NaOH} \longrightarrow 2\text{Na}_2\text{CrO}_4 + 6\text{NaBr} + 4\text{H}_2\text{O}$.
69. $2\text{Na}_2\text{Cr}_2\text{O}_7 + 3\text{C} \longrightarrow 2\text{Na}_2\text{CO}_3 + \text{CO}_2 + 2\text{Cr}_2\text{O}_3$.
70. $\text{Na}_2\text{Cr}_2\text{O}_7 + \text{S} \longrightarrow \text{Na}_2\text{SO}_4 + \text{Cr}_2\text{O}_3$.
71. $\text{Na}_2\text{Cr}_2\text{O}_7 + 14\text{HCl} \longrightarrow 2\text{CrCl}_3 + 2\text{NaCl} + 3\text{Cl}_2 + 7\text{H}_2\text{O}$.
72. $\text{K}_2\text{Cr}_2\text{O}_7 + 3\text{H}_2\text{S} + 4\text{H}_2\text{SO}_4 \longrightarrow \text{Cr}_2(\text{SO}_4)_3 + 3\text{S} + \text{K}_2\text{SO}_4 + 7\text{H}_2\text{O}$.

73. $K_2Cr_2O_7 + 3K_2SO_3 + 4H_2SO_4 \longrightarrow Cr_2(SO_4)_3 + 4K_2SO_4 + 4H_2O.$
74. $K_2Cr_2O_7 + 6KI + 7H_2SO_4 \longrightarrow Cr_2(SO_4)_3 + 4K_2SO_4 + 3I_2 + 7H_2O.$
75. $K_2Cr_2O_7 + 6FeSO_4 + 7H_2SO_4 \longrightarrow 3Fe_2(SO_4)_3 + Cr_2(SO_4)_3 + K_2SO_4 + 7H_2O.$
76. $(NH_4)_2Cr_2O_7 \xrightarrow{t^0} Cr_2O_3 + N_2 + 4H_2O.$
77. $2Na_2Cr_2O_7 \xrightarrow{t^0} 2Na_2O + 2Cr_2O_3 + 3O_2.$
78. $2Na_2CrO_4 + H_2SO_4 \longrightarrow Na_2Cr_2O_7 + Na_2SO_4 + H_2O.$
79. $Cu + Cl_2 \xrightarrow{t^0} CuCl_2.$
80. $2Cu + O_2 \xrightarrow{t^0} 2CuO.$
81. $Cu + S \xrightarrow{t^0} CuS.$
82. $Cu + 2H_2SO_4 \text{ đặc} \longrightarrow CuSO_4 + SO_2 + 2H_2O.$
83. $Cu + 4HNO_3 \text{ đặc} \longrightarrow Cu(NO_3)_2 + 2NO_2 + 2H_2O.$
84. $3Cu + 8HNO_3 \text{ loãng} \longrightarrow 3Cu(NO_3)_2 + 2NO + 4H_2O.$
85. $Cu + 2AgNO_3 \longrightarrow Cu(NO_3)_2 + 2Ag.$
86. $Cu + 2FeCl_3 \longrightarrow CuCl_2 + 2FeCl_2.$
87. $3Cu + 8NaNO_3 + 4H_2SO_4 \longrightarrow 3Cu(NO_3)_2 + 4Na_2SO_4 + 2NO + 4H_2O.$
88. $2Cu + 4HCl + O_2 \longrightarrow 2CuCl_2 + 2H_2O.$
89. $CuO + H_2SO_4 \longrightarrow CuSO_4 + H_2O.$
90. $CuO + 2HCl \longrightarrow CuCl_2 + H_2O.$
91. $CuO + H_2 \xrightarrow{t^0} Cu + H_2O.$
92. $CuO + CO \xrightarrow{t^0} Cu + CO_2.$
93. $3CuO + 2NH_3 \xrightarrow{t^0} N_2 + 3Cu + 3H_2O.$
94. $CuO + Cu \xrightarrow{t^0} Cu_2O.$
95. $Cu_2O + H_2SO_4 \text{ loãng} \longrightarrow CuSO_4 + Cu + H_2O.$
96. $Cu(OH)_2 + 2HCl \longrightarrow CuCl_2 + 2H_2O.$
97. $Cu(OH)_2 + H_2SO_4 \longrightarrow CuSO_4 + 2H_2O.$
98. $Cu(OH)_2 \xrightarrow{t^0} CuO + H_2O.$
99. $Cu(OH)_2 + 4NH_3 \longrightarrow [Cu(NH_3)_4]^{2+} + 2OH^-.$
100. $2Cu(NO_3)_2 \xrightarrow{t^0} 2CuO + 2NO_2 + 3O_2.$
101. $CuCl_2 \xrightarrow{\text{điện phân dung dịch}} Cu + Cl_2.$
102. $2Cu(NO_3)_2 + 2H_2O \xrightarrow{\text{điện phân dung dịch}} 2Cu + 4HNO_3 + O_2.$
103. $2CuSO_4 + 2H_2O \xrightarrow{\text{điện phân dung dịch}} 2Cu + 2H_2SO_4 + O_2.$
104. $CuCO_3.Cu(OH)_2 \xrightarrow{t^0} 2CuO + CO_2 + H_2O.$
105. $CuS + 2AgNO_3 \longrightarrow 2AgS + Cu(NO_3)_2.$

106. $\text{CuS} + 4\text{H}_2\text{SO}_4 \text{ đặc} \longrightarrow \text{CuSO}_4 + 4\text{SO}_2 + 4\text{H}_2\text{O}$.
107. $2\text{Ni} + \text{O}_2 \xrightarrow{500^\circ\text{C}} 2\text{NiO}$.
108. $\text{Ni} + \text{Cl}_2 \xrightarrow{t^\circ} \text{NiCl}_2$.
109. $\text{Zn} + \text{O}_2 \xrightarrow{t^\circ} 2\text{ZnO}$.
110. $\text{Zn} + \text{S} \xrightarrow{t^\circ} \text{ZnS}$.
111. $\text{Zn} + \text{Cl}_2 \xrightarrow{t^\circ} \text{ZnCl}_2$.
112. $2\text{Pb} + \text{O}_2 \xrightarrow{t^\circ} 2\text{PbO}$.
113. $\text{Pb} + \text{S} \xrightarrow{t^\circ} \text{PbS}$.
114. $3\text{Pb} + 8\text{HNO}_3 \text{ loãng} \longrightarrow 3\text{Pb}(\text{NO}_3)_2 + 2\text{NO} + 4\text{H}_2\text{O}$.
115. $\text{Sn} + 2\text{HCl} \longrightarrow \text{SnCl}_2 + \text{H}_2$.
116. $\text{Sn} + \text{O}_2 \xrightarrow{t^\circ} \text{SnO}_2$.
117. $5\text{Sn}^{2+} + 2\text{MnO}_4^- + 16\text{H}^+ \rightarrow 5\text{Sn}^{4+} + 2\text{Mn}^{2+} + 8\text{H}_2\text{O}$.
118. $\text{Ag} + 2\text{HNO}_3 \text{ (đặc)} \longrightarrow \text{AgNO}_3 + \text{NO}_2 + \text{H}_2\text{O}$.
119. $2\text{Ag} + 2\text{H}_2\text{S} + \text{O}_2 \longrightarrow 2\text{Ag}_2\text{S} + 2\text{H}_2\text{O}$.
120. $2\text{Ag} + \text{O}_3 \longrightarrow \text{Ag}_2\text{O} + \text{O}_2$.
121. $\text{Ag}_2\text{O} + \text{H}_2\text{O}_2 \longrightarrow 2\text{Ag} + \text{H}_2\text{O} + \text{O}_2$.
122. $2\text{AgNO}_3 \xrightarrow{t^\circ} 2\text{Ag} + 2\text{NO}_2 + \text{O}_2$.
123. $4\text{AgNO}_3 + 2\text{H}_2\text{O} \xrightarrow{\text{điện phân dung dịch}} 4\text{Ag} + 4\text{HNO}_3 + \text{O}_2$.
124. $\text{Au} + \text{HNO}_3 + 3\text{HCl} \longrightarrow \text{AuCl}_3 + 2\text{H}_2\text{O} + \text{NO}$.

C - BÀI TẬP TRẮC NGHIỆM

I – BÀI TẬP CƠ BẢN

Câu 7.1 Các kim loại thuộc dãy nào sau đây đều phản ứng với dung dịch CuCl_2 ?

- A. Na, Mg, Ag. B. Fe, Na, Mg.
C. Ba, Mg, Hg. D. Na, Ba, Ag.

Câu 7.2 Cấu hình electron nào sau đây là của ion Fe^{3+} ?

- A. $[\text{Ar}]3\text{d}^6$. B. $[\text{Ar}]3\text{d}^5$.
C. $[\text{Ar}]3\text{d}^4$. D. $[\text{Ar}]3\text{d}^3$.

Câu 7.3 Quặng sắt nào sau đây có hàm lượng sắt lớn nhất ?

- A. Hematit. B. Manhetit.
C. Xiderit. D. Pirit sắt.

Câu 7.4 Các số oxi hoá đặc trưng của crom là ?

- A. +2, +4, +6. B. +2, +3, +6.
C. +1, +2, +4, +6. D. +3, +4, +6.