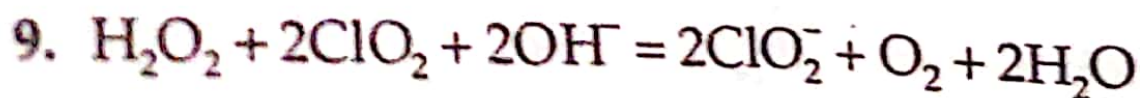
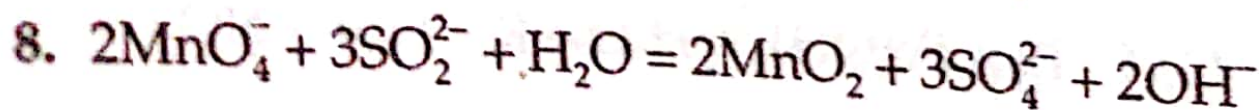
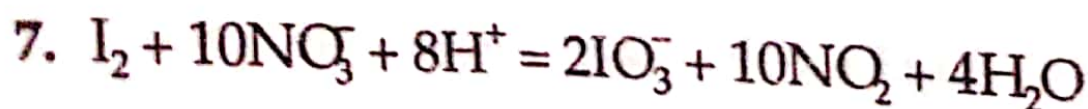
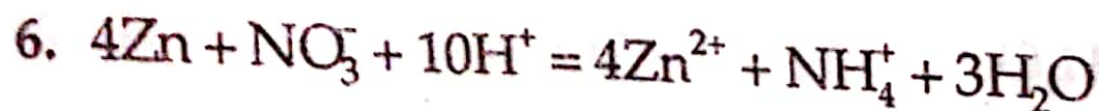
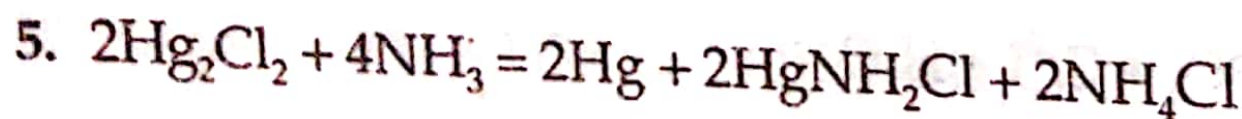
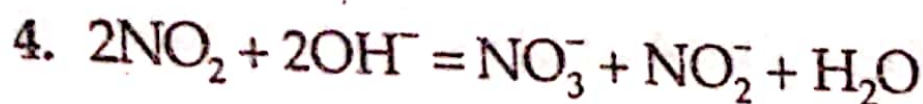
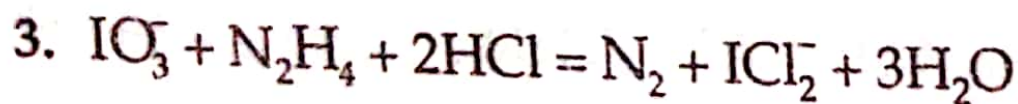
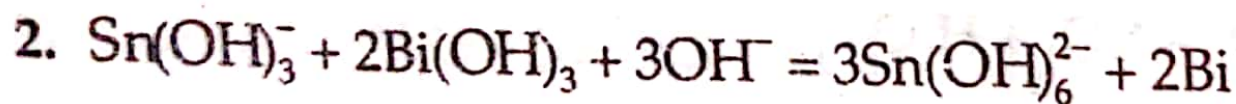
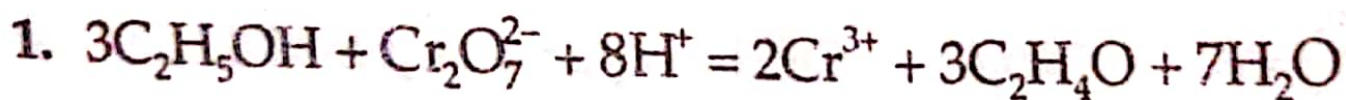


Answers



11. $I_2 + 5Cl_2 + 6H_2O = 2HIO_3 + 10HCl$
12. $2Cl_2 + 4KOH = 2KOCi + 2KCl + 2H_2O$
13. $3Cl_2 + 6KOH = KClO_3 + 5KCl + 3H_2O$
14. $5H_2O_2 + I_2 = 2HIO_3 + 4H_2O$
15. $3H_2O_2 + 2KMnO_4 = 2MnO_2 + 2KOH + 3O_2 + 2H_2O$
16. $5HNO_2 + 2KMnO_4 + 3H_2SO_4 = 5HNO_3 + 2KMnO_4 + K_2SO_4 + 3H_2O$
17. $2NaNO_2 + 2NaI + 2H_2SO_4 = 2NO + I_2 + 2Na_2SO_4 + 2H_2O$
18. $N_2H_4 + 4AgNO_3 + 4KOH = N_2 + 4Ag + 4KNO_3 + 4H_2O$
19. $N_2H_4 + Zn + 2KOH + 2H_2O = 2NH_3 + K_2[Zn(OH)_4]$
20. $Fe + N_2H_4 + 2H_2O = Fe(OH)_2 + 2NH_3$
21. $3H_2S + 2HNO_3 = 2NC \cdot 3S + 4H_2O$
22. $3P + 5HNO_3 = 3HPO_3 + 5NO + H_2O$
23. $K_2Cr_2O_7 + 8HCl = 2KCl + 2CrCl_3 + 7H_2O + 3Cl_2$
24. $2MnO_4^- + 5C_2O_4^{2-} + 16H^+ = 10CO_2 + 2Mn^{2+} + 8H_2O$
25. $Cr_2O_7^{2-} + 3C_2O_4^{2-} + 14H^+ = 2Cr^{3+} + 6CO_2 + 7H_2O$
26. $2Cr(OH)_3 + IO_3 + 4OH^- = I^- + 2CrO_4^{2-} + 5H_2O$
27. $2KMnO_4 + 5H_2S + 4H_2SO_4 = 2KHSO_4 + 2MnSO_4 + 5S + 8H_2O$
28. $2NO_3^- + 6Cl^- + 8H^+ = 2NO + 3Cl_2 + 4H_2O$
29. $H_2O_2 + 2I^- + 2H^+ = I_2 + 2H_2O$
30. $Cr_2O_7^{2-} + 3NO_2^- + 8H^+ = 2Cr^{3+} + 3NO_3^- + 4H_2O$
31. $3N_2O_4 + BrO_3^- + 3H_2O = 6NO_3^- + Br^- + 6H^+$
32. $S_2O_3^{2-} + 2Sb_2O_5 + 6H^+ + 3H_2O = 4SbO + 6H_2SO_3$
33. $Fe_2(SO_4)_3 + Fe = 3FeSC_2$
34. $2Cu(NH_3)_4Cl_2 + 7KCN + H_2O = K_2Cu(CN)_3 + 6NH_3 + KCNO + 2NH_4Cl + 2KCl$
35. $4Ag + 8KCN + 2H_2O + O_2 = 4KAg(CN)_2 + 4KOH$
36. $Zn + 2NO_3^- + 4H^+ = Zn^{2+} + 2NO_2 + 2H_2O$
37. $2MnO_4^- + 3CN^- + H_2O = 2MnO_2 + 3CNO^- + 2OH^-$
38. $3AsO_3^{3-} + IO_3^- = 3AsO_4^{3-} + I^-$
39. $6Fe_3O_4 + 2MnO_4^- + H_2O = 9Fe_2O_3 + 2MnO_2 + 2OH^-$

40. $24\text{H}_2\text{S} + 8\text{Cr}_2\text{O}_7^{2-} + 64\text{H}^+ = 16\text{Cr}^{3+} + 3\text{S}_8 + 56\text{H}_2\text{O}$
41. $2\text{ZnS} + 3\text{O}_2 = 2\text{ZnO} + 2\text{SO}_2$
42. $2\text{KNO}_3 + 6\text{FeSO}_4 + 5\text{H}_2\text{SO}_4 = 2\text{KHSO}_4 + 3\text{Fe}_2(\text{SO}_4)_3 + 2\text{NO} + 4\text{H}_2\text{O}$
43. $3\text{H}_2\text{S} + \text{K}_2\text{Cr}_2\text{O}_7 + 5\text{H}_2\text{SO}_4 = 2\text{KHSO}_4 + \text{Cr}_2(\text{SO}_4)_3 + 3\text{S} + 7\text{H}_2\text{O}$
44. $2\text{KI} + 3\text{H}_2\text{SO}_4 = 2\text{KHSO}_4 + \text{SO}_2 + \text{I}_2 + 2\text{H}_2\text{O}$
45. $3\text{C}_2\text{H}_5\text{OH} + 2\text{MnO}_4^- + \text{OH}^- = 3\text{C}_2\text{H}_3\text{O}^- + 2\text{MnO}_2 + 5\text{H}_2\text{O}$
46. $10\text{Al} + 6\text{KMnO}_4 + 27\text{H}_2\text{SO}_4 = 6\text{KHSO}_4 + 5\text{Al}_2(\text{SO}_4)_3 + 6\text{MnSO}_4 + 24\text{H}_2\text{O}$
47. $2\text{K}_2\text{Cr}_2\text{O}_7 + 2\text{H}_2\text{O} + 3\text{S} = 3\text{SO}_2 + 4\text{KOH} + 2\text{Cr}_2\text{O}_3$
48. $\text{MnO}_2 + 4\text{HCl} = \text{MnCl}_2 + \text{Cl}_2 + 2\text{H}_2\text{O}$
49. $2\text{MnO}_4^- + 3\text{SO}_3^{2-} + \text{H}_2\text{O} = 2\text{MnO}_2 + 3\text{SO}_4^{2-} + 2\text{OH}^-$
50. $\text{Cr}_2\text{O}_7^{2-} + 3\text{SO}_3^{2-} + 8\text{H}^+ = 2\text{Cr}^{3+} + 3\text{SO}_4^{2-} + 4\text{H}_2\text{O}$
51. $\text{I}_2 + \text{SO}_2 + 2\text{H}_2\text{O} = \text{SO}_4^{2-} + 2\text{I}^- + 4\text{H}^+$
52. $\text{Sn} + 4\text{NO}_3^- + 8\text{H}^+ = \text{SnO}_2 + 4\text{NO}_2 + 4\text{H}_2\text{O}$
53. $2\text{MnO}_4^- + 5\text{SO}_2 + 2\text{H}_2\text{O} = 2\text{Mn}^{2+} + 5\text{SO}_4^{2-} + 4\text{H}^+$
54. $2\text{MnO}_4^- + \text{SO}_3^{2-} + 2\text{OH}^- = 2\text{MnO}_4^{2-} + \text{SO}_4^{2-} + \text{H}_2\text{O}$
55. $3\text{ClO}^- + \text{Br}^- = \text{BrO}_3^- + 3\text{Cl}^-$
56. $4\text{Zn} + \text{NO}_3^- + 10\text{H}^+ = 4\text{Zn}^{2+} + \text{NH}_4^+ + 3\text{H}_2\text{O}$
57. $2\text{KMnO}_4 + 16\text{HCl} = 5\text{Cl}_2 + 2\text{KCl} + 2\text{MnCl}_2 + 8\text{H}_2\text{O}$
58. $2\text{BaCrO}_4 + 6\text{KI} + 16\text{HCl} = 2\text{BaCl}_2 + 3\text{I}_2 + 6\text{KCl} + 2\text{CrCl}_3 + 8\text{H}_2\text{O}$
59. $2\text{ClO}_3^- + \text{SO}_2 + \text{H}^+ = 2\text{ClO}_2 + \text{HSO}_4^-$
60. $2\text{Mn}^{2+} + 5\text{S}_2\text{O}_8^{2-} + 8\text{H}_2\text{O} = 2\text{MnO}_4^- + 10\text{HSO}_4^- + 6\text{H}^+$
61. $\text{Cl}_2 + \text{IO}_3^- + 2\text{OH}^- = 2\text{Cl}^- + \text{IO}_4^- + \text{H}_2\text{O}$
62. $3\text{H}_2\text{SO}_3 + \text{Cr}_2\text{O}_7^{2-} + 5\text{H}^+ = 3\text{HSO}_4^- + 2\text{Cr}^{3+} + 4\text{H}_2\text{O}$
63. $2\text{ClO}_2 + \text{SbO}_2^- + 2\text{OH}^- = 2\text{ClO}_2^- + \text{Sb}(\text{OH})_6^- + 2\text{H}_2\text{O}$
64. $4\text{Zn} + \text{NO}_3^- + 7\text{OH}^- = \text{NH}_3 + 4\text{ZnO}_2^{2-} + 2\text{H}_2\text{O}$
65. $3\text{AsO}_3^{3-} + 2\text{MnO}_4^- = 3\text{AsO}_4^{3-} + 2\text{MnO}_2 + 2\text{H}_2\text{O}$
66. $2\text{KMnO}_4 + 5\text{H}_2\text{O}_2 + 3\text{H}_2\text{SO}_4 = 2\text{MnSO}_4 + \text{K}_2\text{SO}_4 + 5\text{O}_2 + 8\text{H}_2\text{O}$
67. $4\text{H}_2\text{O}_2 + \text{PbS} = \text{PbSO}_4 + 4\text{H}_2\text{O}$
68. $2\text{MnO}_4^- + 5\text{C}_2\text{O}_4^{2-} + 16\text{H}^+ = 2\text{Mn}^{2+} + 10\text{CO}_2 + 8\text{H}_2\text{O}$

69. $6\text{Fe}^{2+} + \text{Cr}_2\text{O}_7^{2-} + 14\text{H}^+ = 6\text{Fe}^{3+} + 2\text{Cr}^{3+} + 7\text{H}_2\text{O}$
70. $\text{AsO}_3^{3-} + \text{I}_2 + \text{H}_2\text{O} = \text{AsO}_4^{3-} + 2\text{H}^+ + 2\text{I}^-$
71. $2\text{S}_2\text{O}_3^{2-} + \text{I}_2 = \text{S}_4\text{O}_6^{2-} + 2\text{I}^-$
72. $10\text{HNO}_3 + \text{I}_2 = 2\text{HIO}_3 + 10\text{NO}_2 + 4\text{H}_2\text{O}$
73. $\text{K}_2\text{Cr}_2\text{O}_7 + 7\text{H}_2\text{SO}_4 + 6\text{KI} = 3\text{I}_2 + 4\text{K}_2\text{SO}_4 + \text{Cr}_2(\text{SO}_4)_3 + 7\text{H}_2\text{O}$
74. $3\text{CuO} + 2\text{NH}_3 = 3\text{Cu} + \text{N}_2 + 3\text{H}_2\text{O}$
75. $\text{As}_2\text{S}_5 + 40\text{HNO}_3 = 2\text{H}_3\text{AsO}_4 + 5\text{H}_2\text{SO}_4 + 40\text{NO}_2 + 12\text{H}_2\text{O}$
76. $\text{PbS} + 4\text{O}_3 = \text{PbSO}_4 + 4\text{O}_2$
77. $\text{Cl}_2 + \text{SeO}_3^{2-} + \text{H}_2\text{O} = \text{SeO}_4^{2-} + 2\text{Cl}^- + 2\text{H}^+$
78. $6\text{Cu}_3\text{P} + 124\text{H}^+ + 11\text{Cr}_2\text{O}_7^{2-} = 18\text{Cu}^{2+} + 6\text{H}_3\text{PO}_4 + 22\text{Cr}^{3+} + 53\text{H}_2\text{O}$
79. $3\text{Na}_2\text{SnO}_2 + 2\text{Bi}(\text{OH})_3 = 2\text{Bi} + 3\text{Na}_2\text{SnO}_3 + 3\text{H}_2\text{O}$
80. $\text{H}_2\text{O} + \text{SbCl}_3 = \text{SbOCl} + 2\text{HCl}$
81. $\text{K}_4\text{Fe}(\text{CN})_6 + 61\text{Ce}(\text{NO}_3)_4 + 258\text{KOH} = 61\text{Ce}(\text{OH})_3 + \text{Fe}(\text{OH})_3 + 36\text{H}_2\text{O} + 6\text{K}_2\text{CO}_3 + 250\text{KNO}_3$
82. $4\text{S} + 6\text{OH}^- = 2\text{S}^{2-} + \text{S}_2\text{O}_3^{2-} + 3\text{H}_2\text{O}$
83. $\text{IO}_4^- + 7\text{I}^- + 8\text{H}^+ = 4\text{I}_2 + 4\text{H}_2\text{O}$
84. $2\text{KMnO}_4 = \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2$
85. $(\text{NH}_4)_2\text{Cr}_2\text{O}_7 = \text{N}_2 + 4\text{H}_2\text{O} + \text{Cr}_2\text{O}_3$
86. $3\text{MnO}_4^{2-} + 4\text{H}^+ = 2\text{MnO}_4^- + \text{MnO}_2 + \text{H}_2\text{O}$
87. $4\text{H}_3\text{PO}_3 = 3\text{H}_3\text{PO}_4 + \text{PH}_3$
88. $4\text{Zn} + 10\text{HNO}_3 = 4\text{Zn}(\text{NO}_3)_2 + \text{N}_2\text{O} + 5\text{H}_2\text{O}$
89. $24\text{CuS} + 16\text{NO}_3^- + 64\text{H}^+ = 24\text{Cu}^{2+} + 3\text{S}_8 + 16\text{NO} + 32\text{H}_2\text{O}$
90. $2\text{CuSO}_4 + 4\text{KI} = \text{Cu}_2\text{I}_2 + \text{I}_2 + 2\text{K}_2\text{SO}_4$
91. $2\text{FeSO}_4 = \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$ [Hint: Change in ON = 2]
92. $12\text{NaOH} + 6\text{Cl}_2 = 10\text{NaCl} + 2\text{NaClO} + 6\text{H}_2\text{O}$
93. $\text{NH}_3 + \text{Hg}_2\text{Cl}_2 = \text{Hg} + \text{Hg}(\text{NH}_2)\text{Cl} + \text{HCl}$
94. $\text{Br}_2 + 2\text{OH}^- = \text{BrO}^- + \text{Br}^- + \text{H}_2\text{O}$
95. $\text{As}_2\text{S}_5 + 40\text{HNO}_3 = 5\text{H}_2\text{SO}_4 + 40\text{NO}_2 + 2\text{H}_3\text{AsO}_4 + 12\text{H}_2\text{O}$
96. $\text{Cr}_2\text{O}_7^{2-} + 3\text{SO}_2 + 5\text{H}^+ = 2\text{Cr}^{3+} + 3\text{HSO}_4^- + \text{H}_2\text{O}$
97. $4\text{HCl} + 3\text{WO}_3 + \text{SnCl}_2 = \text{H}_2\text{SnCl}_6 + \text{W}_3\text{O}_8 + \text{H}_2\text{O}$

