Equations

1. iron + sulfur → iron (II) sulfide

$Fe + S \rightarrow FeS$

2. zinc + cupric sulfate → zinc sulfate + copper

$Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$

3. silver nitrate + sodium bromide → sodium nitrate + silver bromide

$AgNO_3 + NaBr \rightarrow NaNO_3 + AgBr$

4. potassium chlorate (heated) → potassium chloride + oxygen

$KClO_3 \longrightarrow KCl + O_2$

5. water (electricity) → hydrogen + oxygen

$H_2O \rightarrow H_2 + O_2$

6. mercury (II) oxide (heated) → mercury + oxygen

$HgO \rightarrow Hg + O_2$

7. potassium iodide + lead (II) nitrate → lead (II) iodide + potassium nitrate

$KI + Pb(NO_3)_2 \rightarrow PbI_2 + KNO_3$

8. aluminum + oxygen → aluminum oxide

$Al + O_2 \rightarrow Al_2O_3$

9. magnesium chloride + ammonium nitrate → magnesium nitrate + ammonium chloride

$MgCl_2 + NH_4NO_3 \longrightarrow Mg(NO_3)_2 + NH_4Cl$

10. iron (III) chloride + ammonium hydroxide →iron (III) hydroxide + ammonium chloride

$FeCl_3 + NH_4OH \rightarrow Fe(OH)_3 + NH_4Cl$

12. iron (III) oxide + carbon → iron + carbor monoxide

$Fe_2O_3 + C \rightarrow Fe + CO$

13. iron + water → hydrogen + iron(III) oxide

$Fe + H_2O \rightarrow H_2 + Fe_2O_3$

14. iron (III) chloride + potassium hydroxide → potassium chloride + iron (III) hydroxide.

$FeCl_3 + KOH \longrightarrow KCl + Fe(OH)_3$

15. aluminum + sulfuric acid → aluminum sulfate + hydrogen

$Al + H_2SO_4 \rightarrow Al_2(SO_4)_3 + H_2$

Equations

Write a balanced chemical equation to represent each of the following chemical reactions:

Synthesis 1. iron + sulfur → iron (II) sulfide

$Fe_{(s)} + S_{(s)} \rightarrow FeS_{(s)}$

Single R. ☐ (2.) zinc + cupric sulfate → zinc sulfate + copper

$Zn_{(s)} + CuSO_{4(aq)} \rightarrow ZnSO_{4(aq)} + Cu_{(s)}$

D.R. 3. silver nitrate + sodium bromide → sodium nitrate + silver bromide

$AgNO_{3(aq)} + NaBr_{(aq)} \rightarrow NaNO_{3(aq)} + AgBr_{(s)}$

Decomp. – (4.) potassium chlorate (heated) → potassium chloride + oxygen

$2KClO_{3(aq)} \xrightarrow{\Delta} 2KCl_{(aq)} + 3O_{2(g)}$

Decomp. 5. water (electricity) → hydrogen + oxygen

$2H_2O_{(l)} \rightarrow 2H_{2(g)} + O_{2(g)}$

Decomp. ☐ 6. mercury (II) oxide (heated) → mercury + oxygen

$2HgO_{(s)} \rightarrow 2Hg_{(s)} + O_{2(g)}$

D.R. – 7. potassium iodide + lead (II) nitrate → lead (II) iodide + potassium nitrate

$2KI_{(aq)} + Pb(NO_3)_{2(aq)} \rightarrow PbI_{2(s)} + 2KNO_{3(aq)}$

Synth. – ☐ (8.) aluminum + oxygen → aluminum oxide

$4Al_{(s)} + 3O_{2(g)} \rightarrow 2Al_2O_{3(s)}$

D.R. 9. magnesium chloride + ammonium nitrate → magnesium nitrate + ammonium chloride

$MgCl_{2(aq)} + 2NH_4NO_{3(aq)} \rightarrow Mg(NO_3)_{2(aq)} + 2NH_4Cl_{(aq)}$

D.R. 10. iron (III) chloride + ammonium hydroxide → iron (III) hydroxide + ammonium chloride

$FeCl_{3(aq)} + 3NH_4OH_{(aq)} \rightarrow Fe(OH)_{3(aq)} + 3NH_4Cl_{(aq)}$

D.R.? * 11. sodium peroxide + water → sodium hydroxide + oxygen

$2Na_2O_{2(s)} + 2H_2O_{(l)} \rightarrow 4NaOH_{(aq)} + O_{2(g)}$

S.R. – 12. iron (III) oxide + carbon → iron + carbon monoxide

$Fe_2O_{3(s)} + 3C_{(s)} \rightarrow 2Fe_{(s)} + 3CO_{(g)}$

S.R. ☐ (13.) iron + water → hydrogen + iron (III) oxide

$2Fe_{(s)} + 3H_2O_{(l)} \rightarrow 3H_{2(g)} + Fe_2O_{3(s)}$

D.R. Grade 14. iron (III) chloride + potassium hydroxide → potassium chloride + iron (III) hydroxide

$FeCl_{3(aq)} + 3KOH_{(aq)} \rightarrow 3KCl_{(aq)} + Fe(OH)_{3(aq)}$

S.R. * 15. aluminum + sulfuric acid → aluminum sulfate + hydrogen

$2Al_{(s)} + 3H_2SO_{4(aq)} \rightarrow Al_2(SO_4)_{3(aq)} + 3H_{2(g)}$

(continued)