Answers

SNC2D

Neutralization Reactions

Example:
When dissolved sulfuric acid reacts with dissolved sodium hydroxide, the dissolved salt sodium sulfate and water are produced. Write the word equation and balanced chemical equation for the reaction.

a) Word Equation:
sulfuric acid + sodium hydroxide ⟶ sodium sulfate + water

b) Balanced Chemical Equation
$H_2SO_{4\,(aq)} + \mathbf{2}NaOH_{(aq)} \longrightarrow Na_2SO_{4\,(aq)} + \mathbf{2}H_2O_{(l)}$

Questions:

1. For each neutralization reaction below, identify the missing product or reactant.

a) Lithium hydroxide + hydrofluoric acid ⟶ lithium fluoride + water

b) potassium hydroxide + hydrochloric acid ⟶ potassium chloride + water

c) Lithium hydroxide + nitric acid ⟶ lithium nitrate + water

d) $H_3PO_{4\,(aq)} + 3\,NaOH_{(aq)} \longrightarrow Na_3PO_{4\,(aq)} + 3\,H_2O_{(l)}$

e) $2\,NaOH_{(aq)} + H_2SO_{4\,(aq)} \longrightarrow Na_2SO_{4\,(aq)} + 2\,H_2O_{(l)}$

2. When $KOH_{(aq)}$ reacts with $HBr_{(aq)}$, a neutralization reaction occurs. Write the word equation and balanced chemical equation.

potassium hydroxide + hydrobromic acid ⟶ potassium bromide + water

$KOH_{(aq)} + HBr_{(aq)} \longrightarrow KBr_{(aq)} + H_2O_{(l)}$ (H(OH))

✓ balanced

3. Dissolved sulfuric acid (H_2SO_4) reacts with dissolved magnesium hydroxide ($Mg(OH)_2$) to produce a salt and water. Write the word equation and balanced chemical equation.

sulfuric acid + magnesium hydroxide ⟶ magnesium sulfate + water

$H_2SO_{4(aq)} + Mg(OH)_{2(aq)} \longrightarrow MgSO_{4(aq)} + 2\,H_2O_{(l)}$