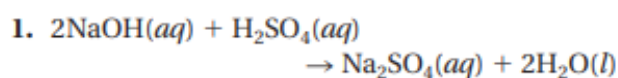


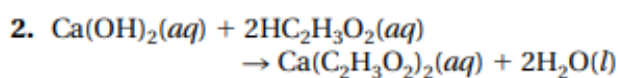
Acid-Base Chemistry Review

- Arrhenius Concept of Acid and Bases (Old and Revised)
- Bronsted-Lowry Acid-Base Concept
(Identify acids/bases, amphiprotic)
- Conjugate Acids and Bases
- Water Equilibrium
- Strong/weak Acids/Bases

Section 19.4

$$0.014 \text{ L H}_2\text{SO}_4 \times \frac{0.75 \text{ mol H}_2\text{SO}_4}{1 \text{ L H}_2\text{SO}_4} \times \frac{2 \text{ mol NaOH}}{1 \text{ mol H}_2\text{SO}_4} = 0.021 \text{ mol NaOH}$$

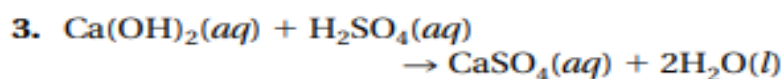
$$\text{Molarity} = \frac{\text{moles}}{\text{liters}} = \frac{0.021 \text{ mol NaOH}}{0.038 \text{ L NaOH}} = 0.55M \text{ NaOH}$$



$$0.0142 \text{ L HC}_2\text{H}_3\text{O}_2 \times \frac{0.0140 \text{ mol HC}_2\text{H}_3\text{O}_2}{1 \text{ L HC}_2\text{H}_3\text{O}_2} \times \frac{1 \text{ mol Ca}(\text{OH})_2}{2 \text{ mol HC}_2\text{H}_3\text{O}_2} = 9.94 \times 10^{-5} \text{ mol Ca}(\text{OH})_2$$

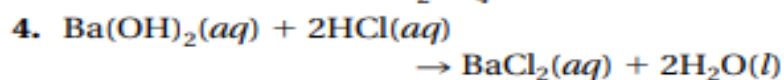
$$= 9.94 \times 10^{-5} \text{ mol Ca}(\text{OH})_2$$

$$\text{Molarity} = \frac{9.94 \times 10^{-5} \text{ mol Ca}(\text{OH})_2}{0.0246 \text{ L Ca}(\text{OH})_2} = 0.00404M$$



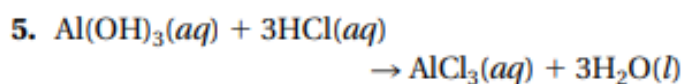
$$0.0198 \text{ L Ca(OH)}_2 \times \frac{0.0100 \text{ mol Ca(OH)}_2}{1 \text{ L Ca(OH)}_2} \\ \times \frac{1 \text{ mol H}_2\text{SO}_4}{1 \text{ mol Ca(OH)}_2} = 0.000198 \text{ mol H}_2\text{SO}_4 \\ = 0.000198 \text{ mol H}_2\text{SO}_4$$

$$\text{Molarity} = \frac{\text{moles}}{\text{liters}} = \frac{0.000198 \text{ mol H}_2\text{SO}_4}{0.0124 \text{ L H}_2\text{SO}_4} \\ = 0.0160 \text{ M H}_2\text{SO}_4$$



$$0.0122 \text{ L HCl} \times \frac{0.25 \text{ mol HCl}}{1 \text{ L HCl}} \\ \times \frac{1 \text{ mol Ba(OH)}_2}{2 \text{ mol HCl}} \\ = 0.0015 \text{ mol Ba(OH)}_2$$

$$\text{liters} = \frac{\text{moles}}{\text{molarity}} = \frac{0.0015 \text{ mol Ba(OH)}_2}{0.12 \text{ M Ba(OH)}_2} \\ = 0.0125 \text{ L Ba(OH)}_2 = 13 \text{ mL Ba(OH)}_2$$



$$\begin{aligned} & 0.0550 \text{ g Al(OH)}_3 \times \frac{1 \text{ mol Al(OH)}_3}{78.0 \text{ g Al(OH)}_3} \\ & \times \frac{3 \text{ mol HCl}}{1 \text{ mol Al(OH)}_3} = 0.00212 \text{ mol HCl} \\ \text{liters} &= \frac{\text{moles}}{\text{molarity}} = \frac{0.00212 \text{ mol HCl}}{0.200 \text{ M HCl}} \\ &= 0.0106 \text{ L HCl} = 10.6 \text{ mL HCl} \end{aligned}$$

Section 19.5

- $\text{CHO}_2^- + \text{H}^+ \rightleftharpoons \text{HCHO}_2$
 $\text{HCHO}_2 + \text{OH}^- \rightleftharpoons \text{CHO}_2^- + \text{H}_2\text{O}$
- neutral solution
 - acidic solution
 - basic solution

Section Review 19.4

Part A Completion

1. acid
2. hydroxide
3. water
4. neutralization
5. titration
6. end point
7. equivalence

Part B True-False

8. AT
9. AT
10. AT
11. NT

Part C Matching

12. c
13. e
14. a
15. b
16. d

Part D Problem

17. a. $\text{H}_3\text{PO}_4 + \text{Al}(\text{OH})_3 \rightarrow \text{AlPO}_4 + 3\text{H}_2\text{O}$
b. $2\text{HI} + \text{Ca}(\text{OH})_2 \rightarrow \text{CaI}_2 + 2\text{H}_2\text{O}$

19.5

Part A Completion

- | | |
|--------------|-------------|
| 1. salt | 6. strong |
| 2. acidic | 7. weak |
| 3. basic | 8. buffer |
| 4. neutral | 9. capacity |
| 5. hydrolyze | |

Part B True-False

- | | |
|--------|--------|
| 10. NT | 12. ST |
| 11. NT | 13. AT |

Part C Matching

- | | |
|-------|-------|
| 14. a | 16. b |
| 15. d | 17. c |

Part D Questions and Problems

18. a. acidic
b. neutral
c. basic

Worksheet