

Hydrolysis Questions and Problems

1. What requirement must an ion meet in order to react with water?
2. Write the formula for a salt containing the following ions:
(a) SO_4^{2-} _____ (b) NH_4^+ _____ (c) CH_3COO^- _____
(d) PO_4^{-3} _____ (e) CO_3^{2-} _____ (f) NO_3^- _____
3. Which of the ions listed in question 2 could react with water rendering it acidic? _____
Which of the ions listed in question 2 could react with water rendering it basic? _____
Which of the ions listed in question 2 could not react with water? _____
4. **Predict** the pH of the following aqueous salt solution? Write hydrolysis reactions to support your predictions.
(a) LiCl _____
(b) CaSO_3 _____
(c) NaHCO_3 _____
(d) $\text{Fe}(\text{NO}_3)_3$ _____
5. Predict the pH of an aqueous $\text{NH}_4\text{CH}_3\text{COO}$ solution. Explain
6. Calculate the pH of a 0.70M CH_3COONa (sodium acetate) solution.
7. Calculate the pH of a 0.50M NH_4Cl solution.
8. Calculate the pH of the following aqueous salt solutions on the back of this sheet, and report your answers here:
(a) 0.5 M KCH_3COO _____ (b) 0.25 M NH_4NO_3 _____ (c) 0.1M Na_2CO_3 . _____