

Name: _____

Date: _____

[6 pt] 1. Define Acids and Bases according to:

- (a) Arrhenius

- (b) Bronsted-Lowry

- (c) Lewis

[4 pt] 2. What is the **difference** between the Arrhenius and Bronsted-Lowry definitions of acids and bases? What is the implication of the difference in definitions.

[5 pt] 3. Answer the following questions:

- (a) Acids change litmus paper from:

- (b) Bases change litmus paper from:

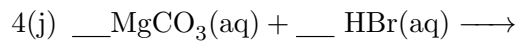
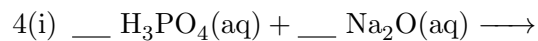
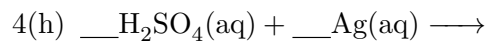
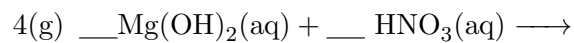
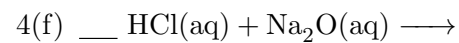
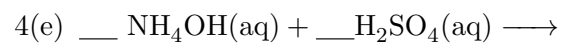
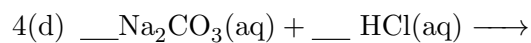
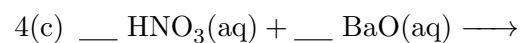
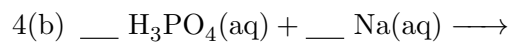
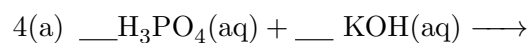
- (c) A hydrogen ion is nothing more than a bare:

- (d) In water a hydrogen ion combines with water to form a:

- (e) In an acidic solution the concentration H^+ ions is (greater than, less than, or equal to) the concentration of OH^- ions?

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[30 pt] 4. Complete the following reactions. Include the state of the products where appropriate. If no reaction occurs, write NR for the products



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- [7 pt] 5. Show a picture showing how KCl would dissociate in water. Label the attractive force that exists between water molecules and the ions in solution. What is meant by the term solvation shell?
- [3 pt] 6. What is the main difference(s) between strong electrolytes, weak electrolytes, and a nonelectrolytes?
- [6 pt] 7. Which classes of compounds generally form strong electrolytes, weak electrolytes, and a nonelectrolytes? Give an example of each
- [2 pt] 8. List 6 strong Acids (Formula and Name).
- [2 pt] 9. List 6 strong Bases (Formula and Name).
- [2 pt] 10. List 4 weak acids given in class (Formula and Name).

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[5 pt] 11. Classify each of the following compounds as either a (S)trong electrolyte, (W)eak electrolyte or (N)onelectrolyte.

11(a) HClO_4 11(a) _____

11(b) $\text{HC}_2\text{H}_3\text{O}_2$ 11(b) _____

11(c) NaNO_3 11(c) _____

11(d) $\text{C}_6\text{H}_{12}\text{O}_6$ 11(d) _____

11(e) KCl 11(e) _____

Write the (1) Molecular, (2) Ionic and (3) Net Ionic equations for each of the following reactions. Balance all charges and equations, and include states.

[6 pt] 12. Silver Nitrate + Barium Chloride \longrightarrow Silver Chloride + Barium Nitrate

[6 pt] 13. Sodium Carbonate + Sulfuric Acid \longrightarrow Sodium Sulfate + Water + Carbon Dioxide

[6 pt] 14. Acetic Acid + Sodium Hydroxide \longrightarrow Sodium Acetate + Water