

Name _____

Blk: _____ Date: _____

Chemistry 12 Bronsted-Lowry Acids and Equilibria

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1. Write the formula for a **proton** (1 mark) _____
2. Write the formula for a **hydrated proton** (1 mark) _____
3. Write the formula for a **hydronium** ion (1 mark) _____
4. Draw the Lewis Structures for the reaction between water and the proton to form hydronium: (3 marks)

5. Give the **Arrhenius** definition of an **acid** (1 mark) _____

6. Give the **Arrhenius** definition of a **base** (1 mark) _____

7. Give the **Bronsted-Lowry** definition of an **acid** (1 mark):

8. Give the **Bronsted-Lowry** definition of a **base** (1 mark)

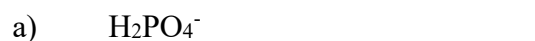
9. Given the equation: $\text{HCO}_3^- + \text{H}_2\text{S} \rightleftharpoons \text{H}_2\text{CO}_3 + \text{HS}^-$
 - a) The **acid** on the left side is (1 mark) _____
 - b) The **base** on the left side is (1 mark) _____
 - c) The **acid** on the right side is (1 mark) _____
 - d) The **base** on the right side is (1 mark) _____

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10. Find the *conjugate acids* of each of the following (5 marks)



11. Find the *conjugate bases* of each of the following (5 marks)



12. Give the formulas of a conjugate acid/base pair in which the *dihydrogen citrate ion* ($\text{H}_2\text{C}_6\text{H}_5\text{O}_7^{1-}$) is the conjugate base. (2 marks)

Conjugate acid _____ Conjugate base _____

13. Give the formulas of a conjugate acid/base pair in which the *dihydrogen citrate ion* ($\text{H}_2\text{C}_6\text{H}_5\text{O}_7^{1-}$) is the conjugate acid. (2 marks)

Conjugate acid _____ Conjugate base _____

14. Is the dihydrogen citrate ion *amphiprotic*? (1 mark) _____

16 Explain your answer. (1 mark) _____

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15. Formic acid, HCOOH , is the substance responsible for the sting in ant bites. Write an equation showing it acting as an ACID when reacted with water. Label the acids and bases in the forward and reverse reactions. Identify the two acid-base pairs. (5 marks)

16. Pyridine, $\text{C}_5\text{H}_5\text{N}$, is a Brønsted-Lowry base. It is used in the production of many pharmaceuticals. Write an equation showing it acting as a BASE when reacted with water. Label the acids and bases in the forward and reverse reactions. Identify the two acid-base pairs. (5 marks)