NAME: **HONORS CHEMISTRY**

SECTION: Bronsted-Lowry Theory

1. **Define the following terms according to Bronsted-Lowry theory.**

Acids are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bases are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Conjugate pairs differ by only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

B. For each of the following reactions, draw an arrow below the equation to represent proton transfer between the reactants. Then, identify the conjugate acid-base pairs.

 **Acid Base**

3. HCH3COO + H2O ⇌ H3O+ + CH3COO- Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. HCl + SO32- ⇌ HSO3- + Cl- Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. NH3 + HNO2 ⇌ NO2- + NH4+ Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. NH4+ + CO32- ⇌ HCO3- + NH3 Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. HClO + SO42- ⇌ HSO4- + ClO- Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. HSO4- + OH- ⇌ H2O + SO42- Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Conjugate pair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Complete each reaction. Identify the acid, base, conjugate acid and conjugate base. Finally, draw brackets to connect conjugate pairs.

Example: NH3 + HNO2 ⇌ NO2- + NH4+

 base acid conj. base conj. acid

9. HBrO + CO32- ⇌

10. NO2- + HSO32- ⇌

11. NH4+ + CH3COO- ⇌

12. HIO + NH3 ⇌

13. HClO3 + S2- ⇌

 14. HS- + PO33- ⇌

15. Which of the following are amphiprotic? HS- HClO4 NO2- H2O HSO4-