1 Classify the following as Brønsted-Lowry acids, bases, or both.

- © HSO₃
- e H₂O _____

- b нсоон
- d HSO₄
- (f) H₃O+

2 Write the formula of the conjugate base for each of the following acids.

- (a) HClO
- © HS-
- e NH₄⁺

- ⓑ NH₃
- (d) H₃O⁺
- f H₃CCOOH

3 Write the formula of the conjugate acid for each of the following bases.

- (d) HPO₄²⁻
- (f) CH₃NH₂ _____

[4] Complete the equation for the reaction of each of the following with water. Then, indicate whether each reaction can be explained by Arrhenius, Brønsted-Lowry, or both.

- (a) HI (aq.) + H_2O (1) \rightleftharpoons
- (b) HF (aq.) + H_2O (l) \rightleftharpoons
- © $C_2H_2O_2$ (aq.) + H_2O (1) \Longrightarrow
- \bigcirc CO₃²⁻ (aq.) + H₂O (1) \rightleftharpoons
- \bigcirc O_2^- (aq.) + H_2O (1) \Longrightarrow

Name:	Date:	

Conjugate Acid-Base Pairs

Answers

(-) Glabbilly the following as Diblisted Bowly actas, Bases, of Bot.	1	Classify the	following as	s Brønsted–Lowry	acids,	bases,	or both
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(a) Cl⁻ Base

© HSO₃ Both

(e) H₂O Both

(b) HCOOH Acid

d HSO₄ Both

f H₃O+ Acid

2 Write the formula of the conjugate base for each of the following acids.

(a) HClO ClO- © HS- S2-

e NH₄ NH₃

b NH₃ NH₂

f H₂CCOOH H₂CCOO

3 Write the formula of the conjugate acid for each of the following bases.

(a) F-HF © HSO_3 H_2SO_3

 $\stackrel{\text{(e)}}{}$ NH₃ NH₄⁺

(b) SO_4^{2-} HSO_4^{-}

(d) HPO_4^{2-} $H_2PO_4^{-}$ (f) CH_3NH_2 $CH_3NH_3^{+}$

[4] Complete the equation for the reaction of each of the following with water. Then, indicate whether each reaction can be explained by Arrhenius, Brønsted-Lowry, or both.

(a) HI (aq.) + $H_2O(1) \rightleftharpoons I^-(aq.) + H_3O^+(aq.)$

Brønsted-Lowry and Arrhenius acid

(b) HF (aq.) + $H_2O(1) \rightleftharpoons F^-(aq.) + H_3O^+(aq.)$

Brønsted-Lowry and Arrhenius acid

© $C_2H_3O_2$ (aq.) + H_2O (1) \rightleftharpoons $HC_2H_3O_2$ (aq.) + OH^2 (aq.)

Brønsted-Lowry base only

d $CO_3^{2-}(aq.) + H_2O(1) \rightleftharpoons HCO_3^{-}(aq.) + OH^{-}(aq.)$

Brønsted-Lowry base only

(e) O_2^- (aq.) + H_2O (l) \rightleftharpoons 2 OH⁻ (aq.)

Brønsted-Lowry base only