Name: _____

EXTRA REVIEW: INTRODUCTION TO ACIDS AND BASES

1) Which equation illustrates H_2O acting as a Bronsted-Lowry base?

A) $C + H_2O \longrightarrow CO + H_2$

B) $CH_3COO^-(aq) + H_2O \longrightarrow CH_3COOH(aq) + OH^-(aq)$

C) $H^+(aq) + H_2O \longrightarrow H_3O^+(aq)$

D) $2Na + 2H_2O \longrightarrow 2NaOH(aq) + H_2$

2) Which substance can act as an Arrhenius acid in aqueous solution?

A) HI B) NaI C) NH_3 D) LiH

3) Given the reaction:

$$HX + H_2O \longrightarrow H_3O^+(aq) + X^-(aq)$$

Based on the equation, HX would be classified as

A) an acid, because it donates a proton

B) an acid, because it accepts a proton

C) a base, because it accepts a proton

D) a base, because it donates a proton

4) A student tested a 0.1 M aqueous solution and made the following observations:

- conducts electricity
- turns blue litmus to red
- reacts with Zn(s) to produce gas bubbles

Which compound could be the solute in this solution?

A) LiBr B) LiOH C) CH_3OH D) HBr

5) Which formula represents a conjugate acid-base pair?

A) CH_3COOH and CH_3COO^-

B) H_3O^+ and OH^-

C) H_3PO_4 and PO_4^{3-}

D) H_2SO_4 and SO_4^{2-}

6) Given the reaction:

$$HF + H_2O \rightleftharpoons F^- + H_3O^+$$

What species is the Bronsted acid in the reverse reaction?

A) F^- B) H_2O C) HF D) H_3O^+

7) In the reaction $HBr + H_2O \rightleftharpoons H_3O^+ + Br^-$, which is a conjugate acid-base pair?

A) H_3O^+ and Br^-
B) H_3O^+ and HBr
C) HBr and Br^-
D) HBr and H_2O

8) According to the Bronsted-Lowry theory, H_2O is considered to be a base when it

A) accepts an electron
B) accepts a proton
C) donates a proton
D) donates an electron

9) According to the Arrhenius theory, a substance that is classified as an acid will *always* yield

A) $NH_4^+(aq)$
B) $CO_3^{2-}(aq)$
C) $H^+(aq)$
D) $OH^-(aq)$

10) As HF dissolves in water, the following ionization reaction occurs:

$$HF + H_2O \rightleftharpoons H_3O^+ + F^-$$

In this reaction, a proton is donated to

A) HF by F^-
B) H_3O^+ by F^-
C) H_2O by HF
D) H_3O^+ by H_2O

11) When an Arrhenius base is placed in H_2O, the only negative ion present in the solution is

A) H^-
B) O^{2-}
C) OH^-
D) H_3O^-

12) According to the Arrhenius theory, when an acid substance is dissolved in water it will produce a solution containing only one kind of positive ion. To which ion does the theory refer?

A) hydrogen
B) sodium
C) acetate
D) chloride

13) An aqueous solution of an ionic compound turns red litmus blue, conducts electricity, and reacts with an acid to form a salt and water. This compound could be

A) KNO_3
B) HCl
C) LiOH
D) NaI