

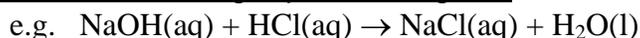
Extending the Acid/Base Concept

1. Definitions (pg. 75, 417 – 418, glossary)

- When H^+ is by itself it is often referred to as a _____.
When attached to a water molecule it is called a _____ ion and is symbolized _____.
- Define the terms: monoprotic, polyprotic, diprotic, and triprotic.
- What name is given to the reaction that occurs between acids and bases?
- Define acids and bases according to both the Arrhenius and Bronsted definitions. (set up your definitions in the form of a chart). Which of these definitions did we use in grade 11?

2. Applying Acid/Base Definitions

a) Reactions involving aqueous reagents:



Use the above reaction to illustrate the difference between Arrhenius and Bronsted definitions of acids and bases (place your answers in chart form – in each box give the relevant reaction that shows how NaOH or HCl acts as an acid or as a base).

b) Reactions involving non-aqueous reagents:



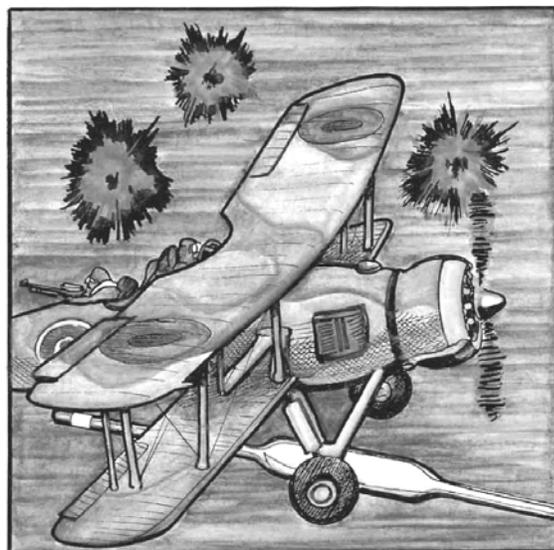
- Explain why the Arrhenius definition does not apply to the above reaction.
- Draw the Lewis diagram for the formation of $NH_4Cl(g)$ from $NH_3(g)$ and $HCl(g)$.
- State, with a reason, which is the Bronsted acid and which is the Bronsted base.

3. Lewis Acids and Bases (pg. 427)

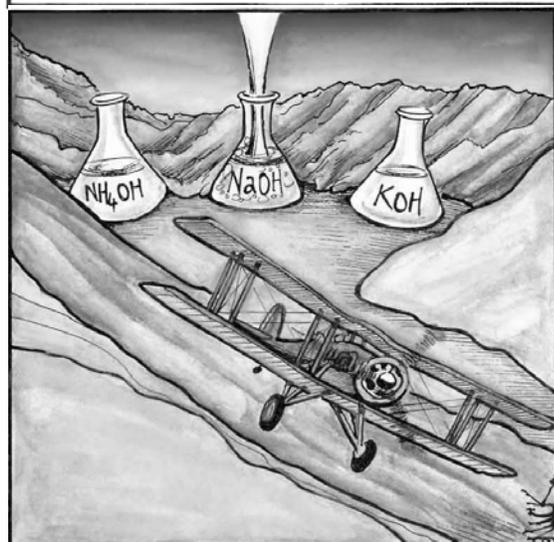
- Define "Lewis Acid" and "Lewis Base".
- Which of the three definitions (Arrhenius, Bronsted, Lewis) is the most universal?

4. Conjugate Bronsted Acids and Bases (pg. 418)

- Complete the reaction: $HCN(aq) + H_2O$
- Which is the Bronsted acid for the forward reaction?
Which is the Bronsted base?
- Which is the Bronsted acid for the reverse reaction?
Which is the Bronsted base?
- Define "conjugate acid-base pair".
- What are the conjugate acid-base pairs in a)?
- Do PE 25, 26 (pg. 419). Refer to ex. 11.16 – 11.19.
- Do PE 27, 28 (pg. 420). Refer to ex. 11.20, 11.21.
- Do RE 11.77 (pg. 438).



Despite the heavy flak, McAllister's aim was true, and his carefully measured aliquot of hydrochloric acid found its mark deep in the enemy's reservoir of sodium hydroxide.



McAllister grinned wryly: finally, one of the enemy's strongest bases had been completely neutralized

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