

CHEMISTRY 12 – UNIT IV – Acids, Bases and Salts

I: Acids, Bases and Salts (Properties and definitions)

It is expected that students will be able to...

I1: Identification of Acids/Bases

- 1) Make a table with the following headings and make a complete list of tests and outcomes from your data from the lab and everyday experiences.

Expeimental method	Acid property	Base property

I2: General acids/bases

- 1) Write names and formulae of some common acids and bases and outline some of their common properties, uses and commercial names. (*section IV.2*)
- 2) Which of the following is a common base found in drain cleaners?
a) bleach b) vinegar c) milk of magnesia d) sodium hydroxide

I3: Acid/Base definitions

- 1) What is the **GENERAL** definition of: (a) an acid; (b) a base; (c) a salt
- 2) What is a definition for an Arrhenius (a) acid; (b) base (do **NOT** give a typical textbook definition)
- 3) What is a definition for a Bronsted-Lowry (a) acid; (b) base (do **NOT** give a typical textbook definition)

I4: The Protonated Water Molecule

- 1) What is the relationship between an hydrogen cation and a hydronium ion? Give an **analogy** to relate the two particles to a 'real-life' example (*a macroscale analogy to be exact*)

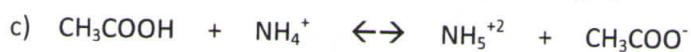
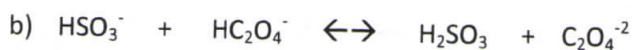
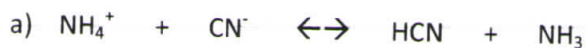
J1: Strong particles vs Weak particles

- 1) Make a table with the following headings and discuss the following experimental methods: give TWO examples of each, what are 'other known' names for each, bond strength, solubility, ionization, type of reaction with water, conductivity.

Method	Strong particle	Weak particle

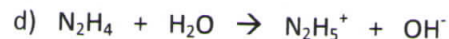
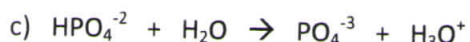
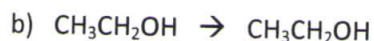
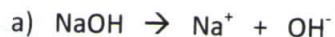
J2: Weak acids/bases and Conjugate acid/base pairs

- 1) For the following reactions below, indicate which particles are acting as weak acids and weak bases AND identify the conjugate acid/base pairs in each!



List any particle(s) that exhibit **amphiprotic** behaviour in the above reactions

- 2) Which equation best describes the interaction of a weak base with water?



J3: Conductivity of solutions

- 1) Consider the following solutions: **0.1M HCl; 0.2M H₃PO₄; 0.3M NaOH; 0.4M NaCl**

- Give the chemical equation for each particle in water.
- Rank the following particles as an acid, base OR a salt.
- Rank the following particles as a Strong particle or a Weak particle
- Rank the following solutions in terms of their conductivity tested with the same circuit from **lowest to highest** conductivity.

J4: Predicting Products for acid/base reactions

- 1) For the each of the following situations, you are mixing the following together in a closed system. Write out the predominant reaction that will occur.

