

# Chemistry

## Acids and Bases - Intro Assignment

1. Define the following terms:

a. acidic solution

a solution with a pH less than seven

b. alkaline solution

a basic solution, a solution with a pH greater than seven

c. amphiprotic

a substance that can act as either an acid or a base

d. amphoteric

a substance that can act as either an acid or a base

e. anhydrous

without water

f. basic solution

a solution with a pH greater than seven

g. conjugate acid

the species formed when a base gains a proton

h. conjugate base

the species formed when an acid loses a proton

i. diprotic acid

an acid with two ionisable hydrogen atoms

j. electrolyte

a substance that conducts electricity when aqueous or molten

k. hydrolysis

the reaction of a salt with water to produce an acidic or basic solution

l. hydronium ion



m. monoprotic acid

an acid with one ionisable hydrogen atom

n. neutral solution

a solution with a pH of seven

o. pH

a measurement of the acidity level using a logarithmic scale

$$\text{pH} = -\log[\text{H}_3\text{O}^+]$$

p. pH indicator

a substance that changes colour at different pH levels

q. strong acid

an acid that ionizes 100% in solution

r. strong base

a base that dissociates 100% in solution

s. triprotic acid

an acid with three ionisable hydrogen atoms

t. weak acid

an acid that ionizes less than 100% in solution

u. weak base

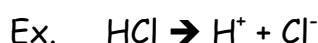
a base that ionizes or dissociates less than 100% in solution

2. List the properties of acids
- Tart or sour taste
  - Aqueous solutions conduct electricity
  - Cause chemical dyes (indicators) to change colour
  - React with many metals to produce hydrogen gas
  - Can be neutralized by bases
  - Turn blue litmus red

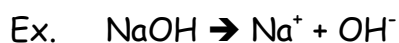
3. List the properties of bases
- Bitter taste
  - Feel slippery
  - Aqueous solutions conduct electricity
  - Cause chemical dyes (indicators) to change colour
  - Can be neutralized by acids
  - Turns red litmus blue

4. Explain the Arrhenius theory of acids and bases.

The Arrhenius theory describes an acid as a substance that releases hydrogen ions in solution.



The Arrhenius theory describes a base as a substance that releases hydroxide ions in solution.



5. Explain the Brønsted-Lowry theory of acids and bases.

The Brønsted-Lowry theory considers an acid a proton donor and a base to be a proton acceptor. All substances that are defined as acids or bases by the Arrhenius theory are still considered acids and bases according to Brønsted-Lowry, however, the Brønsted-Lowry includes substances that were not included in the Arrhenius definition.

