

Problem Set # 1

Properties of Acids and Bases

1. According to the Arrhenius definition, what is an acid? A base? Give an example of each.

2. Fill in the following chart, which shows the properties of acids, bases and salts.

| | <u>Red Litmus</u> | <u>Blue Litmus</u> | <u>Phenolphthalein</u> | <u>Conductivity</u> | <u>Taste</u> |
|-------|-------------------|--------------------|------------------------|---------------------|--------------|
| Acids | | | | | |
| Bases | | | | | |
| Salts | | | | | N/A |

3. Identify the following as properties of HCl, HNO₃, H₂SO₄, CH₃COOH, NH₃, NaOH, or KOH. You may find it useful to use your Hebden workbook (or the internet) as a reference.

- (a) commercial name is caustic soda _____ (b) found in car batteries _____
- (c) window cleaner with strong odour _____ (d) used to make explosives _____
- (e) stains the skin yellow _____ (f) stomach acid _____
- (g) absorbs moisture from the air _____ (h) changes fat to soap _____
- (i) used in food preservation _____ (j) also known as muriatic acid _____

4. Classify the following substances as either acids (A), bases (B), salts (S), or neither (N).

- (a) H₂SO₄ ____ (b) NaOH ____ (c) NO₂ ____ (d) KCl ____
- (e) Ca(OH)₂ ____ (f) HCl ____ (g) CO ____ (h) Mg(NO₃)₂ ____

5. Complete and balance the following neutralization reactions. For each, write the formula equation, total ionic equation, and net ionic equation.

