

CHEM 122 Problem Set 4

1) Name the following ions:

- |                       |                       |                  |                                |
|-----------------------|-----------------------|------------------|--------------------------------|
| a) $\text{CO}_3^{2-}$ | b) $\text{SO}_4^{2-}$ | c) $\text{Br}^-$ | d) $\text{C}_2\text{O}_4^{2-}$ |
| e) $\text{NO}_3^-$    | f) $\text{SO}_3^{2-}$ | g) $\text{I}^-$  | h) $\text{PO}_4^{3-}$          |
| i) $\text{NO}_2^-$    | j) $\text{Cl}^-$      | k) $\text{F}^-$  | l) $\text{HCO}_3^-$            |
| m) $\text{PO}_3^{2-}$ | n) $\text{NH}_4^+$    | o) $\text{OH}^-$ | p) $\text{S}_2\text{O}_3^{2-}$ |

2) Name the following compounds:

- |                             |                             |                             |
|-----------------------------|-----------------------------|-----------------------------|
| a) $\text{MgCl}_2$          | b) $\text{Mg}(\text{OH})_2$ | c) $\text{Li}_2\text{CO}_3$ |
| d) $\text{CuSO}_4$          | e) $\text{AgNO}_3$          | f) $\text{NaHCO}_3$         |
| g) $\text{Na}_2\text{CO}_3$ | h) $\text{CaCO}_3$          | i) $\text{CuS}$             |
| j) $\text{PbS}$             | k) $\text{NaI}$             | l) $\text{SrCO}_3$          |
| m) $\text{Hg}_2\text{Cl}_2$ | n) $\text{PbCl}_2$          | o) $\text{AgCl}$            |
| p) $\text{BaCO}_3$          | q) $\text{CaCO}_3$          | r) $\text{BeS}$             |

3) There are 3 parts to this question: 1) balance the following reactions, 2) identify which of these reactions is redox decomposition, non-redox decomposition, redox combination, non-redox combination, single replacement or double replacement reactions and 3) name the reactants and the products (if necessary, go to <http://www.wncc.edu/~carman/km121lex/week4.pdf>, slides 45-49 to complete this question):

- $\text{Mg} + \text{Cl}_2 \rightarrow \text{MgCl}$
- $\text{Na} + \text{N}_2 \rightarrow \text{NaN}_3$
- $\text{Ba} + \text{S} \rightarrow \text{BaS}$
- $\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{NaSO}_4 + \text{H}_2\text{O}$
- $\text{LiCO}_3 + \text{HCl} \rightarrow \text{LiCl}_2 + \text{H}_2\text{O} + \text{CO}_2\uparrow$
- $\text{Sr}(\text{NO}_3)_2 + \text{HCl} \rightarrow \text{SrCl} + \text{HNO}_3$
- $\text{K} + \text{H}_2\text{O} \rightarrow \text{KOH} + \text{H}_2\uparrow$
- $\text{Al} + \text{O}_2 \rightarrow \text{Al}_2\text{O}_3$
- $\text{MnSO}_4 + \text{HNO}_3 \rightarrow \text{Mn}(\text{NO}_3)_2 + \text{H}_2\text{SO}_4$
- $\text{Fe} + \text{O}_2 \rightarrow \text{Fe}_3\text{O}_4$