Chem 130 *Coastline College*
Fall 2016 *Dupon*

Homework Set 4 Solutions

(Distributed 9/28/16; Due on 10/5/16)

Read Chapters 5 & 6 in Zumdahl and complete the listed questions from the text: Chapter 5: 19, 36, 40, 42, 49; Chapter 6: 39, 73, 78; as well as the following problems:

A. Complete the table below with the missing ion, formula or name:

Cation	Anion	Ionic Formula	Name
Sr^{2+}	N^{3-}	***Sr_3N_2***	***Strontium nitride***
NH_4^+	***CO_3^{2-}***	$(NH_4)_2CO_3$	***Ammonium carbonate***
Na^+	***ClO_4^-***	***$NaClO_4$***	Sodium perchlorate
K^+	***$Cr_2O_7^{2-}$***	$K_2Cr_2O_7$	***Potassium dichromate***
Ca^{2+}	***PO_4^{3-}***	***$Ca_3(PO_4)_2$***	Calcium phosphate

B. Write the name or formula for the following molecular compounds:

(i) BrF_3 ***bromine trifluoride*** (ii) dinitrogen pentoxide ***N_2O_5***

(iii) P_4O_{10} ***tetraphosphorus decoxide*** (iv) carbon tetrachloride ***CCl_4***

(v) Selenium hexafluoride ***SeF_6***

C. Suggest three different indications that a chemical reaction has occurred.

1) color change 2) gas emission 3) precipitate formation

D. Balance the chemical reactions shown:

(i) _2_$NaBrO_2$ + ___Br_2 --→ _2_BrO_2 + _2_NaBr

(ii) _2_$NaNO_3$ --------→ _2_$NaNO_2$ + ___O_2

(iii) ___C_5H_8 + _7_ O_2 --→ _5_CO_2 + _4_H_2O

(iv) ___UO_2 + _4_HF --→ ___UF_4 + _2_H_2O

(v) _2_$Cu(NO_3)_2$ ---→ _4_NO_2 + _2_CuO + __O_2

Problems from Zumdahl:

Chapter 5:

19. (a) iron(II) phosphide (I)
(b) calcium bromide (I)
(c) dinitrogen pentoxide (NI)
(d) lead (IV) chloride (I)
(e) disulfur decafluoride (NI)
(f) copper (I) oxide (I)

36.(a) sodium permanganate
(b) aluminum phosphate
(c) Chromium (II)carbonate
(d)calcium hypochlorite
(e) barium carbonate
(f) calcium chromate

40.(a) hypochlorous acid
(b) sulfurous acid
(c) bromic acid
(d) hypoiodous acid
(e) perbromic acid
(f) hydrosulfuric acid
(g) hydroselenic acid
(h) phosphorous acid

42.(a) MgF_2 (b) FeI_3 (c) HgS (d) Ba_3N_2 (e) $PbCl_2$ (f) SnF_4 (g) Ag_2O (h)K_2Se

49. (a) Na_2O_2 (b) $Ca(ClO_3)_2$ (c) RbOH (d) $Zn(NO_3)_2$ (e) $(NH_4)_2Cr_2O_7$ (f) H_2S
(g) $CaBr_2$ (h) HOCl (i) K_2SO_4 (j) HNO_3 (k) $Ba(C_2H_3O_2)_2$ (l) Li_2SO_3

Chapter 6:

39. (a) $K_2SO_4 + BaCl_2 \text{ -----> } BaSO_4 + 2\ KCl$
(b) $Fe + H_2O \text{ ------> } FeO + H_2$
(c) $NaOH + HClO_4 \text{ -------> } NaClO_4 + H_2O$
(d) $3\ Mg + Mn_2O_3 \text{ ------> } 3\ MgO + 2\ Mn$
(e) $2\ KOH + KH_2PO_4 \text{ --------> } K_3PO_4 + 2\ H_2O$
(f) $4\ NO_2 + 2\ H_2O + O_2 \text{ ------> } 4\ HNO_3$
(g) $2\ BaO2 + 2\ H_2O \text{ ---------> } 2\ Ba(OH)_2 + O_2$
(h) $4\ NH_3 + 5\ O_2 \text{ -------> } 4\ NO + 6\ H_2O$

73 .(a) $Cl_2 + 2\ KBr \text{ ---> } Br_2 + 2\ KCl$
(b) $4\ Cr + 3\ O_2 \text{ ------> } 2\ Cr_2O_3$
(c) $P_4 + 6\ H_2 \text{ -------> } 4\ PH_3$
(d) $2\ Al + 3\ H_2SO_4 \text{ ------> } Al_2(SO_4)_3 + 3\ H_2$
(e) $PCl_3 + 3\ H_2O \text{ --------> } H_3PO_3 + 3\ HCl$
(f) $2\ SO_2 + O_2 \text{ --------> } 2\ SO_3$
(g) $C_7H_{16} + 11\ O2 \text{ ------> } 7\ CO_2 + 8\ H_2O$
(h) $2\ C_2H_6 + 7\ O_2 \text{ ----} \rightarrow 4\ CO_2 + 6\ H_2O$

78 . $4\ Fe + 3\ O_2 \text{ ------> } 2\ Fe_2O_3$
$2\ PbO_2 \text{ --------> } 2\ PbO + O_2$
$2\ H_2O_2 \text{ -------> } O_2 + 2\ H_2O$