Quiz III General Chemistry I Lecture Fall 14 Dr. Hahn 20 pts 9/26 F 9:30am form A quiz # ____

Name (print name) key Name (sign name) _____

Please show all work for full credit and to get partial credit. $N_A = 6.022 \times 10^{23}$

1. Give the nomenclature term or number prefix or give the molecular formula which matches for the following. (4 pts, 2pts each)

# prefix for 5 penta hydroxide $OH^-$

2. Give the name for the compound $SF_6$ (4 pts) sulfur hexafluoride

covalent - # prefix

sulfur fluoride + ide = fluoride 6 = hexa

3. For the molecule given, what is the formula mass ? 164.1 amu (2 pts)

What is the molar mass? 164.1 grams (show work). (2 pts) **$Ca(NO_3)_2$**

$1Ca + 2N + 6O$ $Ca = 40.08$, $N = 14.01$, $O = 16.00$

$40.08 + 2(14.01) + 6(16.00) = 164.1$

Ca N O

4. For the molecule shown below (molar mass **$(NH_4)_2S$** = 68.17 g/mol ), if you have 7.92 grams of the compound **$(NH_4)_2S$** what is the number of atoms of **H** in that number of grams of the compound (8 pts) Show work to receive full credit.

$$7.92\ g\ (NH_4)_2S \times \frac{1\ mol\ (NH_4)_2S}{68.17\ g\ (NH_4)_2S} \times \frac{8\ mol\ H}{1\ mol\ (NH_4)_2S} \times \frac{6.022 \times 10^{23}\ atoms\ H}{1\ mol\ H}$$

$= 5.60 \times 10^{23}$ atoms H

1 molecule $(NH_4)_2S$ has $4 * 2 = 8$ atoms H

Extra Credit: Given the following balanced reaction, give the number of each type of atom or polyatomic ion on each side of the reaction by filling in the blanks. Show work for partial credit. (3 pts)

$2KI + Pb(NO_3)_2 \rightarrow PbI_2 + 2\ KNO_3$

# of K atoms (reactant) 2 # of $NO_3^-$ (product) 2

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Please show all work for full credit and to get partial credit. $N_A = 6.022 \times 10^{23}$

1. Give the nomenclature term or number prefix or give the molecular formula which matches for the following. (4 pts, 2pts each)

$NO_3^-$ nitrate **octa** is the number prefix for 8

2. Give the name for the compound **$MgBr_2$** (4 pts) magnesium bromide

Cation anion
magnesium : brom~~ine~~ + ide bromide
ionic – no # prefix

3. For the molecule given, what is the formula mass ? 142.07 amu (2 pts)

What is the molar mass ? 142.07 grams (show work). (2 pts) **$Na_2SO_4$**

2 Na + 1 S + 4 O
| | |
23.00 32.07 16.00

2(23.00) + 32.07 + 4(16.00) = 142.07
Na S O

4. For the molecule shown below (molar mass of **$Mg(C_2H_3O_2)_2$** = 142.41 g/mole), if you have 1.99 grams of the compound **$Mg(C_2H_3O_2)_2$** , what is the number of atoms of **C** in that number of grams of the compound (8 pts) Show work to receive full credit.

$$1.99\ g\ Mg(C_2H_3O_2)_2 \times \frac{mol\ Mg(C_2H_3O_2)_2}{142.141\ g\ Mg(C_2H_3O_2)_2} \times \frac{4\ mol\ C}{1\ mol\ Mg(C_2H_3O_2)_2} \times \frac{6.022 \times 10^{23}\ atoms\ C}{1\ mol\ C} = 3.37 \times 10^{22}\ atoms\ C$$

1 molecule $Mg(C_2H_3O_2)_2$ has 2*2 atoms C

Extra Credit: ~~Given the following balanced reaction, give the number of each type of atom on each side of the reaction by filling in the blanks. Show work for partial credit. (3 pts)~~

$C_3H_8$ → $4H_2 + 3C$
# of H(reactant) 8 # of H (product) 2×4 = 8

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Please show all work for full credit and to get partial credit. $N_A = 6.022 \times 10^{23}$

1. Give the nomenclature term or number prefix for the following or give the molecular formula which matches. (4 pts, 2pts each)

Carbonate $CO_3^{-2}$ **di** is the # prefix for 2

2. Give the name for the compound **$Ca_3(PO_4)_2$** (4 pts) Calcium phosphate

cation - calcium
anion - polyatomic ion phosphate ionic no # prefix

3. For the molecule given, what is the formula mass? 52.10 amu (2 pts)

What is the molar mass ? 52.10 grams (show work). (2 pts) **$(NH_4)_2O$**

$2N, 8H, 1O$ — $N \rightarrow 14.01$, $H \rightarrow 1.01$, $N \rightarrow 14.01$

$2(14.01) + 8(1.01) + 16.00 = 52.10$

N H O

4. For the molecule shown below (molar mass of **$Ba(NO_3)_2$** = 261.35 g/mole), if you have 78.2 grams of the compound **$Ba(NO_3)_2$** , what is the number of atoms of **O** in the grams of the compound (8 pts) Show work to receive full credit.

$$78.2\,g\,Ba(NO_3)_2 \times \frac{mol\,Ba(NO_3)_2}{261.35\,g\,Ba(NO_3)_2} \times \frac{6\,mol\,O}{1\,mol\,Ba(NO_3)_2} \times$$

$$\frac{6.022 \times 10^{23}\,atoms\,O}{1\,mol\,O} = 1.08 \times 10^{24}\,atoms\,O$$

1 molecule $Ba(NO_3)_2$ has $3 * 2 = 6$ atoms O

~~Extra Credit: Given the following balanced reaction, give the number of each type of atom on each~~ side of the reaction by filling in the blanks. Show work for partial credit. (3 pts)

$2\,Na + 2H_2O \rightarrow 2\,NaOH + H_2$

# of H(reactant) $2 * 2 = 4$ total # of H (product) $2 + 2 = 4$

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Please show all work for full credit and to get partial credit. $N_A = 6.022 \times 10^{23}$

1. Give the nomenclature term or number prefix or give the molecular formula which matches for the following. (4 pts, 2pts each)

$SO_4^{-2}$ sulfate # prefix for **3** is tri

2. Give the name for the compound **HBr** (4 pts) hydro bromic acid

hydro ____ ic acid

3. For the molecule given, what is the formula mass ? 255.43 amu (2 pts)

What is the molar mass ? 255.43 grams (show work). (2 pts) **$Ba(C_2H_3O_2)_2$**

1 Ba, 4 C, 6 H, 4 O  Ba = 137.33, C = 12.01
H = 1.01, O = 16.00

$137.33 + 4(12.01) + 6(1.01) + 4(16.00) = 255.43\ g/mol$
Ba  C  H  O

4. For the molecule shown below (molar mass **$Li_2SO_4$** = 109.95 g / mole ), if you have 0.892 grams of the compound **$Li_2SO_4$** , what is the number of atoms of **O** in the given # of grams of the compound (8 pts) Show work to receive full credit.

$$0.892\ g\ Li_2SO_4 * \frac{mol\ Li_2SO_4}{109.95\ g\ Li_2SO_4} * \frac{4\ mol\ O}{1\ mol\ Li_2SO_4} \times \frac{6.022 \times 10^{23}\ atoms\ O}{1\ mol\ O}$$

$= 1.95 \times 10^{22}$ atoms O

Extra Credit: Given the following balanced reaction, give the number of each type of atom or polyatomic ions on each side of the reaction by filling in the blanks. Show work for partial credit. (3 pts)

$2\ HNO_3 + Ca(OH)_2 \rightarrow 2\ H_2O + Ca(NO_3)_2$

# of $OH^-$ (reactant) 2  # of $NO_3^-$ (product) 2

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Name _____ Name _____
(print name) (sign name)

Please show all work for full credit and to get partial credit. $N_A = 6.022 \times 10^{23}$

1. Give the nomenclature term or number prefix or give the molecular formula which matches for the following. (4 pts, 2pts each)

# prefix for **5** _____ hydroxide _____

2. Give the name for the compound $SF_6$ (4 pts) _____

3. For the molecule given, what is the formula mass ?_____ amu (2 pts)

What is the molar mass? _____ grams (show work). (2 pts) **$Ca(NO_3)_2$**

4. For the molecule shown below (molar mass **$(NH_4)_2 S$** = 68.17 g/mol ), if you have 7.92 grams of the compound **$(NH_4)_2 S$** what is the number of atoms of **H** in that number of grams of the compound (8 pts) Show work to receive full credit.

Extra Credit: Given the following balanced reaction, give the number of each type of atom or polyatomic ion on each side of the reaction by filling in the blanks. Show work for partial credit. (3 pts)

$2KI + Pb(NO_3)_2 \rightarrow PbI_2 + 2\,KNO_3$

# of K atoms (reactant) _____ # of $NO_3^-$ (product) _____

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(print name) (sign name)

Please show all work for full credit and to get partial credit. $N_A = 6.022 \times 10^{23}$

1. Give the nomenclature term or number prefix or give the molecular formula which matches for the following. (4 pts, 2pts each)

$NO_3^-$ _____ **octa** is the number prefix for _____

2. Give the name for the compound **$MgBr_2$** (4 pts) _____

3. For the molecule given, what is the formula mass ? _____ amu (2 pts)

What is the molar mass ? _____ grams (show work). (2 pts) **$Na_2SO_4$**

4. For the molecule shown below (molar mass of **$Mg(C_2H_3O_2)_2$** = 142.41 g/mole), if you have 1.99 grams of the compound **$Mg(C_2H_3O_2)_2$** , what is the number of atoms of **C** in that number of grams of the compound (8 pts) Show work to receive full credit.

Extra Credit: Given the following balanced reaction, give the number of each type of atom on each side of the reaction by filling in the blanks. Show work for partial credit. (3 pts)

$C_3H_8$ → $4H_2 + 3C$
# of H(reactant) _____ # of H (product)_____

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1. Give the nomenclature term or number prefix for the following or give the molecular formula which matches. (4 pts, 2pts each)

Carbonate _____ **di** is the # prefix for _____

2. Give the name for the compound $\mathbf{Ca_3 (PO_4)_2}$ (4 pts) _____

3. For the molecule given, what is the formula mass? _____ amu (2 pts)

What is the molar mass ?_____ grams (show work). (2 pts) $\mathbf{(NH_4)_2 O}$

4. For the molecule shown below (molar mass of $\mathbf{Ba (NO_3)_2}$ = 261.35 g/mole), if you have 78.2 grams of the compound $\mathbf{Ba (NO_3)_2}$ , what is the number of atoms of **O** in the grams of the compound (8 pts) Show work to receive full credit.

Extra Credit: Given the following balanced reaction, give the number of each type of atom on each side of the reaction by filling in the blanks. Show work for partial credit. (3 pts)

$2\ Na + 2H_2O \rightarrow 2\ NaOH + H_2$

# of H(reactant) _____ total # of H (product) _____

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Please show all work for full credit and to get partial credit. $N_A = 6.022 \times 10^{23}$

1. Give the nomenclature term or number prefix or give the molecular formula which matches for the following. (4 pts, 2pts each)

$SO_4^{-2}$ _____ # prefix for **3** is _____

2. Give the name for the compound **HBr** (4 pts) _____

3. For the molecule given, what is the formula mass ?_____ amu (2 pts)

What is the molar mass ? _____ grams (show work). (2 pts) **$Ba(C_2H_3O_2)_2$**

4. For the molecule shown below (molar mass **$Li_2SO_4$** = 109.95 g / mole ), if you have 0.892 grams of the compound **$Li_2SO_4$** , what is the number of atoms of **O** in the given # of grams of the compound (8 pts) Show work to receive full credit.

Extra Credit: Given the following balanced reaction, give the number of each type of atom or polyatomic ions on each side of the reaction by filling in the blanks. Show work for partial credit. (3 pts)

$2\ HNO_3 + Ca(OH)_2 \rightarrow 2\ H_2O + Ca(NO_3)_2$

# of $OH^-$ (reactant) _____ # of $NO_3^-$ (product) _____