Initials:_____

Chemistry 105 A

Exam 1

09/16/10

Dr. Jessica Parr

First Letter of last Name

PLEASE PRINT YOUR NAME IN BLOCK LETTERS

Name: _____

Last 4 Digits of USC ID: _____

Lab TA's Name: _____

KEY

Question	Points	Score	Grader
1	8		
2	6		
3	8		
4	11		
5	10		
6	8		
7	6		
8	9		
9	10		
10	12		
11	12		
Total	**100**		

Please Sign Below:

I certify that I have observed all the rules of Academic Integrity while taking this examination.

Signature: _____

Instructions:

1. You must show work to receive credit.
2. There are 11 problems on 9 pages. A periodic table is found on the last page. Please count them before you begin.
3. If necessary, please continue your solutions on the back of the preceding page (facing you).
4. You MUST use black or blue ink in order to be eligible for any regrades. (No whiteout, no erasable ink, no pencil.)
5. Your exams are being scanned, please write your initials in the top right hand corner of each page.
6. Only a Casio FX-260 calculator may be used on Chem 105a/b exams.
7. Turn off cell phones and other electronic communication devices and put them away, out of sight. They may not be taken out of your bag during the exam.
8. When time is called, stop working on your exam immediately, turn the exam over and pass it to the aisle.
9. Good luck!! =)

Initials:_____

1. (8 pt)

(a) Name the following compounds and molecules:

$LiHCO_3$	lithium hydrogen carbonate OR lithium bicarbonate
P_5I_8	pentaphosphorus octaiodide
$HClO_3$	chloric acid
$Co(Cr_2O_7)_2$	Cobalt (IV) dichromate

(b) Give the formulas for the following compounds and molecules:

magnesium phosphide	Mg_3P_2
lead(II) acetate	$Pb(C_2H_3O_2)_2$
sulfurous acid	H_2SO_3
tetranitrogen tetraselenide	N_4Se_4

2. (6 pt) Fill in the blanks.

a. $^{75}_{33}As$ has 33 protons, 42 neutrons and 33 electrons.

b. $^{116}_{49}In^{3+}$ has 49 protons, 67 neutrons and 46 electrons

3. (8 pt) Name the following elements and classify it as one of the following: halogen, noble gas, transition metal, alkaline earth metal or alkali metal

	Symbol	Name	Classification
a.	F	fluorine	halogen
b.	Cu	copper	transition metal
c.	K	potassium	alkali metal
d.	Kr	Krypton	noble gas

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4. (11 pt)

a. The density of the earth is about 3.5 g/cm^3. If the earth has a radius of 7000. miles, what is its mass in kg? $V = \frac{4}{3}\pi r^3$, 1 mile = 1.6093 km.

$$\frac{7000.\ \text{miles}}{1}\left|\frac{1.6093\ \text{km}}{1\ \text{mile}}\right|\frac{1000\ \text{m}}{1\ \text{km}}\left|\frac{100\ \text{cm}}{1\ \text{m}}\right. = 1.127\times10^{9}\ \text{cm}$$

$$V = \frac{4}{3}\pi\left(1.127\times10^{9}\ \text{cm}\right)^3 = 5.996\times10^{27}\ \text{cm}^3$$

$$\frac{5.996\times10^{27}\ \text{cm}^3}{1}\left|\frac{3.5\ \text{g}}{1\ \text{cm}^3}\right|\frac{1\ \text{kg}}{1000\ \text{g}} = 2.1\times10^{25}\ \text{kg}$$

b. Absolute zero has a value of 0 K. What is this temperature on the Fahrenheit scale? Report your answer in 3 significant figures. $T_F = \left(T_C \times \frac{9}{5}\right) + 32$

$$0\ \text{K} - 273 = -273\ ^\circ\text{C}$$

$$T_F = \left(-273 \times \frac{9}{5}\right) + 32 = -459\ ^\circ\text{F}$$