Chemistry 105 A

Exam 3

04/01/08

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: _____

Lab: W 1 / W 4 / Th 9 / Th 1 / Th 4

Please circle lab section above.

Question	Points	Score	Grader
1	28		
2	10		
3	8		
4	16		
5	8		
6	10		
7	5		
8	5		
9	10		
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. If necessary, please continue your solutions on the back of the preceding page (facing you).

3. YOU MUST use black or blue ink. (No pencil, no whiteout, no erasable ink.)

4. There are 9 problems on 12 pages. Please count them before you begin. A periodic table and some useful equations can be found on the last page.

5. Good luck!! =)

1. (22 pt) Answer the following multiple choice or short answer questions.

(a) What is the maximum number of electrons in an atom that can have these quantum numbers?

(i) $n = 6, l = 2$ _____

(ii) $n = 8, l = 3, m_s = +½$ _____

(iii) $n = 1, l = 1, m_l = 0$ _____

(iv) $n = 3, l = 2, m_l = 0$ _____

(b) Match the equation with the correct process:

(1) $X_{(g)} + e^- \rightarrow X^-_{(g)}$ (2) $X_{(g)} \rightarrow X^{2-}_{(g)} + 2\ e^-$ (3) $X^-_{(g)} \rightarrow X^{2-}_{(g)} + e^-$

(4) $X_{(g)} \rightarrow X^-_{(g)} + e^-$ (5) $X_{(g)} \rightarrow X^+_{(g)} + e^-$ (6) $X^-_{(g)} \rightarrow X_{(g)} + e^-$

First Ionization Energy _____

Second Ionization Energy _____

Electron Affinity _____

(c) If n = 9, what are the possible values of l?

_____

(d) If $l = 3$, what are the possible values of m_l?

_____

(e) If n = 2, what are the possible values of m_s?

_____

(f) Arrange the following elements in order of decreasing first ionization energy: P, Cl, Al

_____ > _____ > _____

(g) Circle the member of the following pairs that has the larger radius.

(i) Cl or S (ii) Cl^- or S^{2-} (iii) Si or Mg (iv) Mg^{2+} or F^-

(h) Give the ground state electron configurations for:

Cu:_____

Po:_____