G12 Chemistry: Class 5 Homework

1. Complete the following chart: **[6 marks]**

n	l	m_l	m_s
2			
	0, 1, 2, 3		

2. Without looking at a periodic table, identify the group number, period number, and block of an atom that has the following electron configurations. **[9 marks]**

	$3s^1$	$2s^2$	$5s^2 4d^{10} 5p^5$
Group Number			
Period Number			
Block			

3. Write complete electron configurations for the atom of the element that fits the following descriptions. **[5 marks]**

    a. Group 2 (IIA) element in period 4

    b. Noble gas in period 6

    c. Group 3 (IIIB) element in period 4

    d. Group 16 (VIA) element in period 2

    e. Group 1 (IA) element in period 5

4. Identify all of the possible elements that have the following valence electron configurations. **[3 marks]**

   a) s^2d^1

   b) s^2p^3

   c) s^2p^6

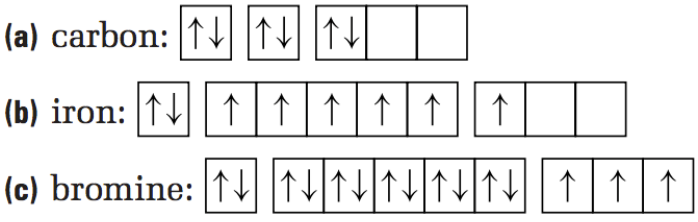
5. For each of the elements below, write the full electron configurations and draw orbital filling diagrams. **[6 marks]**

   a) Potassium

   b) Nickel

   c) Lead

6. Each of the following orbital diagrams is incorrect. Correct the errors and rewrite the correct orbital filling diagram. **[3 marks]**



7. The electron configurations below represent atoms in excited states. Identify each atom and write its ground state electron configuration. **[8 marks]**

   a. $1s^2 2s^2 2p^6 3s^1 3p^1$

   b. $1s^2 2s^2 2p^6 3s^2 3p^4 4p^1$

   c. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^4 4p^1$

   d. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1 4d^2$

8. Identify elements whose atoms have the following valence electron configurations: **[4 marks]**

   a. $5s^1$

   b. $3s^2$

   c. $4s^2 3d^2$

   d. $4s^2 3d^{10} 4p^3$

9. Using your knowledge of orbital filling diagrams, explain why Carbon has a higher electron affinity than Nitrogen even though it should have less electron affinity according to trends in the periodic table. **[3 marks]**