**Chemistry 1 Midterm Review Anderson**

1. When an experimental hypothesis is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a new experiment should be devised for future experimentation.

2. The manipulated variable in an experiment is the same as the independent variable. A student was testing the effect of salt on the boiling point of water. Different amounts of salt were added to 6 beakers of water.

a. What should the constants of this experiment be?

b. What is the manipulated variable?

c. What is the dependent variable?

3. How many significant figures in each?

\_\_\_\_0.002 \_\_\_\_\_2.000 \_\_\_\_0.020 \_\_\_2.002 \_\_\_\_2000. \_\_\_200

4. Why do scientists use sig figs? Do sig figs increase accuracy or precision???

5. Calculate the density of a material that has a mass of 6.2g and volume of 9.3g. Use correct rules for sig figs.

6. What is the Law of Conservation of Mass?

7. Convert 792uL to L. (1000uL=1mL; 1000mL=1L) Use factor and label.

8. 4120Ca+2 How many protons?\_\_\_\_\_\_ neutrons? \_\_\_\_\_ electrons? \_\_\_\_\_ atomic number? \_\_\_\_\_\_

 Mass number? \_\_\_\_\_ Another way to write this isotope? \_\_\_\_\_\_\_\_\_ Is it radioactive? \_\_\_\_\_\_\_\_

9. What is the charge, mass, and location of protons, neutrons, and electrons?

10. Atoms have \_\_\_ numbers of protons and electrons. Ions have lost or gained \_\_\_\_\_\_\_\_\_ and have a charge.

11. What did Rutherford discover about atoms?

12. What are isotopes? What makes them different?

-What information is necessary to calculate the average atomic mass as shown on the periodic table?

13. How was Mendeleev’s periodic table organized?

14. Show the electron configuration of Al. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Ti \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. What does each digit in an electron configuration denote…for example if np6 and n=3, what element would
 this be? n is the denotation of the primary energy level.

16. State the Pauli Exclusion Principle.

17. State the Aufbau Principle.

18. If 2n2 is the formula used to calculate the number of electrons in the principle energy level, how many
 electrons can the 6th energy level accommodate?

19. How may unpaired electrons does an Oxygen atom have?

20. State the Periodic Law.

21. What does the stair-step line on the periodic table mean? Most elements are \_\_\_\_\_\_\_\_\_\_.

22. How does atomic size change across each period? Down each group?

23. How does 1st ionization energy change across each period? Down each group?

24. How does electronegativity change across each period? Down each group?

25. What are anions? cations?

26. Name 3 of each. Transition elements \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Representative elements \_\_\_\_\_\_\_\_\_\_\_\_\_

27. Which elements are the envy of all ions? What rule to ions follow in bonding?

28. If Mg+2 bonds with N-3 what compounds results? formula \_\_\_\_\_\_\_\_\_\_\_ name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Would this compound have a net charge?\_\_\_\_\_\_ How many electrons did Mg lose? \_\_\_\_\_ Did N gain? \_\_\_\_

29. Which subatomic particle has a tendency to change molecular shapes according to VSEPR theory? \_\_\_\_\_\_

30. Which of the following is most polar? H2, F2, HF, HCl (Do the calculation…)