Chemistry Exam Review Semester 1

**Vocabulary:**

Substance atomic number metalloid

Mixture atomic mass covalent bond

Mass average atomic mass ionic bond

Density electron ion

Element proton molecule

Compound neutron octet rule

Solvent nucleus noble gas configuration

Solution energy level allotrope

Physical change orbital anhydrous

Chemical change isotope polyatomic ion

Endothermic group hydrate

Exothermic period hygroscopic

Aqueous solution semiconductor deliquescent

Catalyst inhibitor reactant

Product subscript coefficient

Soluble limiting reagent synthesis

Double displacement single displacement decomposition

Combustion Mendeleev valence electron

Homogeneous heterogeneous

**Questions:**

1. Identify each as a chemical or physical change:
   1. Bending aluminum
   2. Dissolving salt in water
   3. Burning magnesium
2. Identify each as a chemical or physical property
   1. Color
   2. Solubility
   3. Combustibility
3. What is the difference between a group and a period?
4. Explain how you can tell the number of valence electrons an element has by looking at the periodic table
5. Explain how you can tell if a compound is an ionic or covalent compound by looking at the periodic table
6. How many protons, neutrons and electrons does Tin have? How do you know?
7. Draw an electron dot structure of Sulfur.
8. Draw a diagram showing the electrons sulfur has using the circle method
9. Draw the electron configuration of sulfur using the method covered in chapter 7
10. What are the two types of mixtures? Give an example of each
11. What are the two types of substances? Give an example of each
12. What are properties of noble gases?
13. What are properties of alkali metals?
14. What are properties of metalloids?
15. What are properties of the halogens?
16. What was so unusual about how Mendeleev organized the periodic table?
17. How many valence electrons do the following elements have?
    1. Sodium
    2. Chlorine
    3. Aluminum
18. How do you know the “charge” or an element to bond it? Show how you know by bonding Barium and Phosphorus into a compound
19. What are the rules for naming ionic compounds? What is the name of the compound in #18?
20. When are prefixes used in naming compounds?
21. What is the difference between an ionic and a covalent bond?
22. When writing the name of a compound using a transition element, what must be used? Why?
23. Write and balance the following equations:
    1. Lithium phosphide reacts with magnesium chloride to yield magnesium phosphide and lithium chloride
    2. Calcium Iodide reacts with aluminum sulfide to yield…..(you finish and balance this one)
    3. BF2 reacts with N2
    4. Silicon dioxide reacts with iodine
    5. Methane reacts with oxygen
24. For the equations in 23, what type of reaction are they?
25. Describe the electron arrangement that makes an atom stable
26. If you were in a lab with unknown compounds, what are some tests you could perform to see if the compound was ionic or covalent? (what are the properties of those kinds of compounds)
27. What are 3 examples of things you could do to speed up a reaction?
28. What are 3 examples of things you could do to slow down a reaction?
29. Why must coefficients be used to balance equations?
30. Why can subscripts never be changed?
31. Why are valence electrons necessary to know before bonding?
32. Which subatomic particle (proton, neutron or electron) was discovered first? (chapter 2)
33. What is the law of definite proportions? (chapter 2)
34. Which one of these elements was predicted by Mendeleev? (aluminum, potassium, silicon or germanium) (chapter 3)
35. What are the properties of transition elements?
36. Brass is an alloy made of which two elements?
37. Which two actinides are used as nuclear fuels?
38. The maximum number of electrons p sublevels can hold is? (chapter 7)
39. The maximum number of electrons in an f sublevel is? (chapter 7)
40. What is the most abundant element in the universe? (chapter 4)
41. What 2 raw materials are used for photosynthesis, water and what? (chapter 4)