

## 1<sup>st</sup> Semester Chemistry Final Review

1. What is the difference between a solution and a mixture?
2. Give an example of both types of mixtures.
3. Express the number .00795 in scientific notation.
4. What is the difference between accuracy and precision? Give an example of each.
5. How many significant figures in the following numbers:
  - a. 75,670
  - b. .00320
  - c. 303
6. What is the product of  $3.2 \times 10^3$  and  $4.75 \times 10^5$ ?
7. What do the following prefixes represent:
  - a. Centi-
  - b. Hect-
  - c. Deci-
8. What is  $-34^\circ\text{C}$  in Kelvin?
9. What is the volume of an object with 17.5 g of mass and a density of  $4.2\text{g}/\text{cm}^3$ ?
10. Convert the following using a factor-label technique :
  - a. 4.86 km to dm
  - b. 8.342 g to mg
  - c. 13.7 m/sec to hm/hr
11. How many mg of copper can I buy if I only have 1 cent and it costs \$375/ounce? (16 oz = 454 g)
12. Draw a model of the oxygen atom and label the parts with charges of each of the components.
13. Briefly list what each of the scientists was responsible for contributing to the atom theory:
  - a. Dalton
  - b. Rutherford
  - c. Thomson
14. Discuss the different families found on the periodic table.

15. How many protons, neutrons, and electrons are in the magnesium atom?
16. What is the difference between an ionic and molecular compound. List an example of each.
17. What is the formula for the following compounds:
  - a. Barium chloride
  - b. Iron (III) oxide
  - c. Lead (IV) sulfate
  - d. Hydrofluoric acid
  - e. Nitric acid
  - f. Nitrous acid
  - g. Dinitrogen pentoxide
  - h. Calcium sulfide
18. How many orbitals are in the d sublevel? How many electrons can the p sublevel hold?
19. What is the electron configuration for zinc? Gold?
20. What is the quantum numbers for the last electron found in the element sulfur? Polonium?
21. How many moles are in  $3.75 \times 10^{21}$  atoms of aluminum?
22. How many atoms are in 8.24 moles of sodium?
23. How many ions are in 6.48 moles of  $(\text{NH}_4)_2\text{SO}_4$ ?
24. What is the mass of 3.71 moles of  $\text{ZnCl}_2$ ?
25. How many liters does 2.75 moles of  $\text{SO}_2$  gas occupy at STP?
26. What is the percent composition of a compound that consists of 20 g Ca with 16 g S?
27. What is the empirical formula of a compound that consists of 40% S and 60% O?