**Chem 1A: Midterm Review Questions**

**Unit 1**

1. What branch of chemistry studies energy changes?
2. What is the practical use of scientific information?
3. What data is descriptive in nature?
4. What is a scientific law?
5. What is the scientific method?
6. Give three examples of quantitative data.
7. Give two examples of things that are not matter.
8. What variable does experimenter purposely manipulates during an experiment?
9. What kind of chemists study the composition of chemicals?
10. Where is ozone found?
11. What part of a CFC attacks ozone?
12. What was the normal amount of ozone in the 1920s?
13. What is the name given to research that is undertaken to solve a specific problem?
14. What is the measurement of matter whose value depends on gravity?
15. Give two examples of matter.
16. What is used to visualize microscopic structures?
17. Anything that has mass and takes up space is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
18. What branch of chemistry is most concerned with the study of carbon compounds?
19. What kind of chemist studies living organisms?
20. A tentative explanation for a series of observations is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
21. Ozone is made up of how many oxygen atoms?
22. What are three uses of CFCs?

**Unit 2**

1. A unit that is defined by a combination of base units is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. How many centimeters are in a meter? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. What scale provides the base unit for temperature in the SI system? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. The closeness of an experimental value to an accepted value is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Which of the following is the SI base unit for amount of substance? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. How many milligrams are in one gram? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. What is the formula of slope? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. A measure of how close a series of data is to each other is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. Dimensional analysis is a method of problem-solving that focuses on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. The data representation useful for showing parts of a fixed whole is a is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Which is the SI unit for time? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. How many feet are in one mile? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. What axis does the dependent variable go on? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. What axis does the independent variable go on? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. What does a positive slope look like? What does a negative slope look like?

16. Rank from smallest to largest: meter, centimeter, kilometer, millimeter.

**Round each number to 4 significant figures.**

17) 87.67777 18) 8916.2 19) 6.000000 20) 0.00045555

**Calculate and round using rounding rules.**

21) 12.9 + 2.9 22) 1200/2.333 23) 172.33- 14.000 24) 56.0 x 100

**Identify how many sig figs are in the following:**

25) 46 26) 1,000 27) 909 28) 9.09 29) 90.009

**Unit 3**

**Directions: Determine if each of the following is a pure substance (P) or a mixture (M).**

1. Calculator \_\_\_\_\_
2. Brass \_\_\_\_\_
3. Tap water \_\_\_\_\_
4. Oxygen gas \_\_\_\_\_
5. Nitric acid (HNO3) \_\_\_\_\_
6. Blood \_\_\_\_\_
7. Aluminum \_\_\_\_\_
8. Baking soda \_\_\_\_\_

**Directions: Determine if each of the following is a compound (C), element (E), homogeneous mixtures** **(O), or heterogeneous mixtures (H).**

1. Gasoline \_\_\_\_\_
2. Textbook \_\_\_\_\_
3. Sodium chloride \_\_\_\_\_
4. Steel \_\_\_\_\_
5. Unpolluted air \_\_\_\_\_

**Directions: Identify each of the following properties as either physical (P) or chemical (C).**

1. Copper turns green when exposed to the environment \_\_\_\_\_\_
2. The piece of metal is magnetic \_\_\_\_\_\_
3. The density of water is 1.0 gram per cubic centimeter \_\_\_\_\_\_
4. Copper conducts heat \_\_\_\_\_\_

**Directions: Identify each of the following properties as either intensive (I) or extensive (E).**

1. Freezing point \_\_\_\_\_\_
2. Height \_\_\_\_\_\_
3. Density \_\_\_\_\_\_
4. Conductivity \_\_\_\_\_\_
5. Volume \_\_\_\_\_\_

**Directions: Identify each of the following changes as either physical (P) or chemical (C).**

1. A piece of wood burns to form ash \_\_\_\_\_\_
2. Water evaporates into steam \_\_\_\_\_\_
3. A piece of cork is cut in half \_\_\_\_\_\_
4. A bicycle chain rusts \_\_\_\_\_\_
5. \_\_\_\_ is a characteristic that can be observed or measured without changing composition.
6. Classifications based on physical forms are called the \_\_\_\_.
7. A(n) \_\_\_\_ is a form of matter that flows to conform to the shape and fill the entire volume of its container.
8. \_\_\_\_ states that when different compounds are formed by a combination of the same elements, different masses of one element combine with the same relative mass of the of other element in a ratio of small whole numbers.
9. \_\_\_\_ states that, regardless of the amount, a compound is always composed of the same elements in the same proportion by mass.
10. A(n) \_\_\_\_ is a form of matter that has its own definite shaped and volume.
11. \_\_\_\_ depend on the amount of substance present.
12. Alterations to a substance that do not change its composition are \_\_\_\_.
13. The ability of a substance to combine with or change into one or more other substances is called a(n) \_\_\_\_.
14. A(n) \_\_\_\_ is a form of matter that flows, has constant volume, and takes the shape of its container.

**Unit 4**

**Give the family names for each of the following:**

1. Group 1
2. Group 2
3. Groups 3-12
4. Group 17
5. Group 18

**Fill in the blank:**

1. Atomic number = \_\_\_\_\_\_\_\_\_\_
2. Mass number = \_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Charge = \_\_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. The weighted average of all the masses of all isotopes of an element is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. \_\_\_\_\_\_\_ is an example of a lanthanide element.
6. \_\_\_\_\_\_ is an example of an actinide element.
7. \_\_\_\_\_\_ and \_\_\_\_\_\_\_ are liquid elements.
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ discovered the nucleus of an atom.
9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ discovered electrons and had the plum pudding model.
10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was the Greek philosopher that believed that atoms existed.
11. Rutherford’s experiment was called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are atoms with the same atomic number but different mass numbers.
13. \_\_\_\_\_\_\_\_ is the mass number of the most abundant isotope of chlorine.
14. ATOMS have the same number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
15. \_\_\_\_\_ is an example of a halogen.
16. \_\_\_\_\_ is in group 1 but is NOT an alkali metal.
17. Mg is in the family known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
18. Br is in the family known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
19. Negatively charged ions are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
20. Positively charged ions are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.