

*Directions: These are focus questions to help you grasp the text readings. Use these questions to guide you as you read the text. Sections of the textbook will be assigned each night. Practice problems (in red) are mandatory, not optional.*

## **Chapter 1: Chemical Foundations**

### **Section 1**

1. What do you need to use to see atoms?
2. Write the three steps of the scientific method.

### **Section 2**

1. Define Theory:
2. What is the difference between an observation and a theory?
3. Define the law of conservation of mass.
4. What is the difference between a scientific theory and a law? How are laws developed? How is this different than a theory?

### **Section 3**

1. Look at table 1.2. Give the exponential notation for each prefix.  
peta-  
giga-  
pico-  
micro-  
exa-
2. What is the difference between Mass and Weight?

### **Section 4**

1. (True/False) You estimate the last number in a measurement.
2. Read over sample exercise 1.1. Answer question 19 on page 32.
3. What is the difference between precision and accuracy? What determines the precision of a measurement? What determines the accuracy of a measurement?

### **Section 5**

1. Read over the rules for counting significant figures (or recall the Atlantic-Pacific Rule). Then read over sample exercise 1.3. Answer question 25 on page 33.
2. Read the rules for significant figures in mathematical operations and rules for rounding. Then read over sample exercise 1.4. Answer question 29 on page 33.

### **Section 6**

1. What is the best method for converting systems of units?
2. Read over sample exercise 1.5 and answer questions 35 and 37 on page 34.
3. Read over the rest of the sample exercises in the section.

### **Section 7**

1. How do you convert from Kelvin to Celsius?
2. What is the equation to convert from Celsius to Fahrenheit.
3. Read over sample exercise 1.10 and sample exercise 1.11. Answer questions 47 and 84 on page 34 and 37.

### **Section 8**

1. What is density equal to?
2. What are some things that knowing the density can be used for?

### **Section 9**

1. Define matter.
2. What four states does matter exist in?
3. What is the difference between homo and heterogeneous.

4. What are 3 methods for separating mixtures?
5. Define a compound
6. Define element.
7. Do exercises 67 and 69 on pages 35 and 36.

## *Chapter 2: Atoms, Molecules, and Ions*

### **Section 1**

1. Who was the first “chemist” to truly perform quantitative experiments?

### **Section 2**

1. What is the Law of Conservation of Mass?
2. What did the French Chemist Joseph Proust show?
3. Proust’s Law became known as what law today?
4. Who proposed the Law of Multiple Proportions, and what did it state?

### **Section 3**

1. What are the 4 points of Dalton’s Atomic Theory?
2. What is Avogadro’s Hypothesis?

### **Section 4**

1. What device is J.J. Thompson use to develop his theory on electrons?
2. What did this teach us about the atom and how did it do this?
3. What is the Charge-to-Mass ratio Thompson determined?
4. What are the three types of radioactive emissions?
5. What is the Nuclear Atom?
6. What was Rutherford’s experiment, what did it show us, and how were the results interpreted?

### **Section 5**

1. What are the three particles that make up atoms, and what is their charge?
2. What are Isotopes?

### **Section 6**

1. What type of bond is formed from the sharing of electrons?
2. What is a Positive Ions Called? A negative Ion?
3. How is an Ionic bond formed?

### **Section 7**

1. What type of ion do metals tend to form? Nonmetals?

### **Section 8**

1. What is a Binary Compound?
2. In Binary Ionic Compounds what is named first and second?
3. With transition metals what needs to be added to the naming?
4. What are the Steps for naming a Binary Covalent Compound?
5. How do you name acids?
6. Be sure to read the various sample exercises on pages 64 through 69. Then do exercises 67 and 71 on page 77.
7. Be sure to have the polyatomic ion names and formulas memorized!!!!