Review - Section 1A

Part 1: Definitions

1) Physical Property:

2) Chemical Property:

3) Physical Change:

4) Chemical Change:

5) Atom:

6) Molecule:

7) Element:

8) Compound:

9) Chemical Symbol:

10) Chemical Formula:

Part 2: Identifying Chemical & Physical Properties

1) Identify the following as chemical or physical properties:

Copper has a reddish brown color.	
Propane burns readily.	
Carbon dioxide gas extinguishes a candle flame.	
Honey pours more slowly than water.	
Metal wire can be bent.	
Ice floats in water.	
Paper is flammable.	
Sugar is soluble in water.	

2) Classify each as a chemical or a physical change:

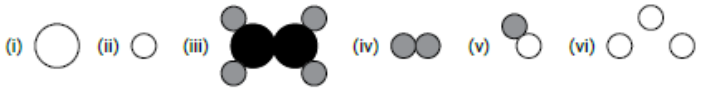
Observation	Type of Change	Evidence of type of change
A candle burns.		
An opened carbonated beverage fizzes.		
Hair curls as a result of a "perm."		
As shoes wear out, holes appear in the soles		
A cut apple left out in the air turns brown		
Flashlight batteries lose their "charge" after extended use.		
Dry cleaning removes oils from clothing.		
Italian salad dressing separates into layers over time.		

Part 3: Small Structures

1) Classify each of these substances as an element or a compound.

CO	HCl	$NaHCO_3$	I_2	Co	Mg	NO

Look at these models.



2a) Which represent elements?

2b) Which represent compounds?

3) What two pieces of information does a chemical formula provide?

4) Name the elements and list the number of each atom in the following formulas for substances:

phosphoric acid, H_3PO_4 (used in soft drinks and fertilizers)	
sodium hydroxide, $NaOH$ (found in some drain cleaners)	
sulfur dioxide, SO_2 (a by-product of coal combustion)	
chlorophyll, $C_{55}H_{72}O_5N_4Mg$ (molecule needed for photosynthesis in plants)	

Part 4: Types of Elements

1) Classify each property as characteristic of metals or nonmetals:

shiny in appearance	
does not react with acids	
shatters easily	
electrically conductive	

2) List the names and symbols of two elements that are metalloids.

3) What would you expect to happen if you tapped a sample of nickel with a hammer?

4) List two properties that make nonmetals unsuitable for electric wiring.

5) List three properties that make metals suitable for coins.

Part 5: Models and Equations:

1) Draw a molecular-level model of oxygen (O_2).

2) Draw a molecular-level model of carbon tetrachloride (CCl_4), a toxic compound once used in the production of refrigerants.

3) Write the formula of the compound below.

4) Translate these written descriptions and drawings into chemical equations:

a) One molecule of methane (CH_4) reacts with two molecules of oxygen (0_2) to form one molecule of carbon dioxide ($C0_2$) and two molecules of water (H_20).

b) One molecule of copper (II) carbonate ($CuCO_3$) can be heated to form one molecule of carbon dioxide ($C0_2$) and one molecule of copper (II) oxide (Cu0).

c) One atom of magnesium reacts with two molecules of hydrochloric acid (HCl) to form one molecule of magnesium chloride ($MgCl_2$) and one molecule of hydrogen (H_2).