

Name: \_\_\_\_\_

Group: \_\_\_\_\_

Date: \_\_\_\_\_

## Quiz: Atoms and Molecules, States of Matter and Phase Changes

1. Fill in the blank: (13 marks)

- a. We know a substance is an element if it can be found on \_\_\_\_\_.
- b. The two types of substances that are considered "pure" substances are: \_\_\_\_\_
- c. The opposite of a pure substance is a \_\_\_\_\_.
- d. The **total number of atoms** in two molecules of glucose, chemical formula  $C_6H_{12}O_6$ , is \_\_\_\_\_. 2
- e. The state of matter containing the weakest chemical bonds is \_\_\_\_\_.
- f. The state of matter containing particles that cannot move freely and can only vibrate is \_\_\_\_\_.
- g. The process of changing from solid to liquid is called \_\_\_\_\_.
- h. The process of changing from gas to liquid is called \_\_\_\_\_.
- i. The process of changing from gas to solid is called \_\_\_\_\_.
- j. A substance made up of three chemically bonded atoms of the same type, such as  $O_3$ , could be classified as an \_\_\_\_\_ and a \_\_\_\_\_ but NOT a \_\_\_\_\_.

2. State the chemical name of each substance and whether it is an atom, molecule, element or compound: (5 marks)

Chemical Formula	Chemical Name of substance	Name of elements in this molecule	Total number of atoms in this molecule
a. $H_2O$			
b. $CO_2$			
c. $C_6H_{12}O_6$			
d. $NaCl$			
e. $O_2$			

3. What is the opposite change of state for each of the following? (3 marks)

- a. melting \_\_\_\_\_
- b. evaporating \_\_\_\_\_
- c. sublimation \_\_\_\_\_

4. In sublimation are the particles moving faster or slower? \_\_\_\_\_ (1 mark)

5. In solidification, are the particles gaining energy or losing energy? \_\_\_\_\_ (1 mark)

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7. Name the 5 signs of a chemical change:

(5 marks)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

8. State whether each of the following is an example of chemical (C) or physical (P) change:

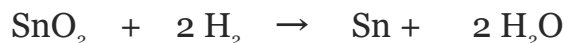
- a. \_\_\_\_\_ Frozen lakes melt as temperatures warm in the spring. (5 marks)
- b. \_\_\_\_\_ A bicycle begins to rust after being left out in the rain.
- c. \_\_\_\_\_ After being peeled, an apple starts to turn brown.
- d. \_\_\_\_\_ Red and Blue Kool-Aid are mixed and turn purple.
- e. \_\_\_\_\_ Frost forms on grass and trees

9. Identify the type of reaction shown in each of the following examples as either synthesis, decomposition, oxidation and/or precipitate. Some examples may fall into more than one of these categories. (4 marks)

(4 marks)

- a. \_\_\_\_\_  $6\text{CO}_2 + 6\text{H}_2\text{O} \xrightarrow{\text{Sunlight energy}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
- b. \_\_\_\_\_  $3\text{H}_2(\text{g}) + \text{N}_2(\text{g}) \rightarrow 2\text{NH}_3(\text{g})$
- c. \_\_\_\_\_  $\text{KClO}_3 \rightarrow \text{KCl} + \text{O}_2$
- d. \_\_\_\_\_  $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{Energy (ATP)}$

9. Draw a particle model representation of the following chemical equation.



(4 marks)

For this reaction, what are the **total number of molecules** in:

(2 marks)

- a) The reactants: \_\_\_\_\_
- b) The products: \_\_\_\_\_

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10. Look at the drawing and state the type of reaction shown in each case.

<b>Drawing of Substance</b>	<b>Pure Substance or Mixture</b>	<b>How many different elements are present?</b>	<b>How many different compounds are present?</b>