Student Name _____ Class _____

1. 

This symbol means …

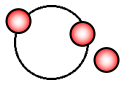
A. toxic
B. reactive
C. corrosive
D. poisonous

2. 

This symbol means …

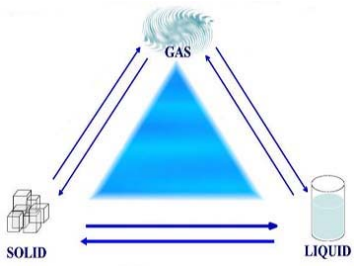
A. toxic
B. reactive
C. corrosive
D. poisonous

3. The particle model helps us to understand about the state of a substance by the number of particles that appear to be moving and the relative spaces between the particles. A liquid substance would be represented most likely by model …

A. 
B. 
C. 
D. 

4. When a substance undergoes a change of state it can use energy or give off energy. The change that occurs when a substance changes **from a liquid to a gas** is referred to as …

A. deposition
B. sublimation
C. vaporization
D. condensation



5. Brass is a solution that is best classified as …

A. element
B. solution
C. compound
D. mechanical

6. A colloid is a heterogeneous mixture that is composed of fine particles evenly distributed throughout another substance. An example of a colloid is …

A. milk
B. mayonnaise
C. flour in water
D. hair gel

7. Properties are characteristics that can be used to describe how a substance behaves. Ductility is a property that describes a substance's …

A. mixing ability
B. reaction with water
C. ability to stretch
D. toxic effect

8. The only list below that describes only chemical properties of a substance is …

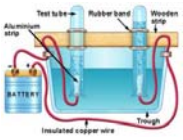
A. reactivity, toxicity, stability, malleability
B. ductility, crystal shape, miscibility, solubility
C. malleability, smell, viscosity, miscibility
D. density, conductivity, combustibility, color

9. Physical or chemical change can be identified by evidence. When a substance undergoes a physical change the evidence used includes all of the following, **EXCEPT** …

A. colour
B. odour
C. toxicity
D. density

10. One of the procedures used today - credited to alchemists (part pharmacist and part mystic) - is a procedure used to separate mixtures, called …
    - **A. dissolving**
    - **B. distillation**
    - **C. desalination**
    - **D. disintegration**

11. Lavoisier was one of the first chemists to use a balanced view of chemical change, which we now call the **Law of** …
    - **A. Conservation of Mass**
    - **B. Definite Composition**
    - **C. Multiple Proportions**
    - **D. Combustion**

12. 

Using electricity to split molecules into their elements is a process called …
    - **A. electrolysis**
    - **B. electricity**
    - **C. electroplating**
    - **D. electrorefining**

13. John Dalton developed a theory that helped explain what happened in the electrolysis of water and was a new way to explain chemical facts and laws. His theory was called the …
    - **A. Quantum Theory**
    - **B. Atomic Theory**
    - **C. Raisin Bun Theory**
    - **D. Plum Pudding Theory**

14. In science, these do not explain anything. They simply describe and summarize what happens.
    - **A. models**
    - **B. theories**
    - **C. ideas**
    - **D. laws**

15. ♀ Early chemists used the planets to identify the elements known to them. This later was a problem, when more elements were discovered, because they ran out of planets.

    This symbol represent the planet and element …
    - **A. Mars - iron**
    - **B. Venus - copper**
    - **C. Mercury - mercury**
    - **D. Jupiter - tin**

16. These elements have both metal and non-metal properties. Some of them are semi-conductors, which means, they can carry an electrical charge under special conditions. Making them great for computers and calculators. They are the …
    - **A. Transition Metals**
    - **B. Rare Earth Elements**
    - **C. Metalloids**
    - **D. Other Metals**

17. The 6 elements in this group all have the maximum number of electrons possible in their outer s hell which makes them stable. They are known as the …
    - **A. Halogens**
    - **B. Alkali Metals**
    - **C. Noble Gases**
    - **D. Alkaline Earth Metals**

18. Mendeleev arranged the element cards into a 'solitaire-like' table. He played with them, by sorting and arranging the elements in many different combinations. He was able to identify gaps where elements, would be able to fit, that were ...
    - **A. known to exist**
    - **B. not yet discovered**
    - **C. rare earth elements**
    - **D. identified by alchemists**

19. In 1915 the Modern Periodic Table was reorganized, including more information about each element with a focus on …
    - **A. atomic structure**
    - **B. Chemical properties**
    - **C. Physical properties**
    - **D. reactivity rating**

20. Vertical columns form a **group** of elements (*numbered* 1-18) The horizontal rows (*numbered* 1-7) are called …
    - **A. lists**
    - **B. types**
    - **C. family**
    - **D. periods**

21. In the periodic table the following elements would be identified as the Noble Gases.
    - **A. Be, Mg, Ca, Sr, Ba, Ra**
    - **B. Li, Na, K, Rb, Cs, Fr**
    - **C. He, Ne, Ar, Kr, Xe, Rn**
    - **D. Rf, Db, Sg, Bh, Hs, Mt, Uun**

22. As you move across the periodic table the properties of the elements change. The most reactive metals include …
    - **A. sodium and lithium**
    - **B. iron and copper**
    - **C. aluminum and carbon**
    - **D. lead and zinc**

23. When any of the 112 elements combine into groups of 2 or more they form compounds. If atoms of elements are shared, this type of compound is formed.
    - **A. ionic**
    - **B. atomic**
    - **C. aqueous**
    - **D. molecular**

24. Guyton de Morveau in France developed a standardized chemical naming system in 1787 to determine a chemical name. The type of element that is always first is the …
    - **A. acid**
    - **B. base**
    - **C. metal**
    - **D. Non-metal**

25. The only compound that contains three elements is …
    - **A. $H_2O_{(l)}$ Water**
    - **B. $C_6H_{12}O_{6(s)}$ Glucose**
    - **C. $CO_{2(g)}$ Carbon dioxide**
    - **D. $NO_{2(g)}$ Nitrogen dioxide**

26. In molecular pure substances the bonding between atoms is strong, but the attraction between the molecules is weak. They are good insulators, poor conductors and have a distinct crystal shape. This type of molecular compound is produced when …
    - **A. metals combine**
    - **B. *non-metals* combine**
    - **C. gases and solids combine**
    - **D. non-metals and metals combine**

27. A molecule is the smallest independent unit of a pure substance. **Diatomic** molecules are molecules made up of.
    - **A. 2 atoms of the same element**
    - **B. more than 2 atoms of an element**
    - **C. 1 atom from 2 different elements**
    - **D. 2 atoms from 2 different elements**

28. When dissolved in water, the metal (**Na**) loses an electron and the nonmetal (**Cl_2**) gains an electron forming an aqueous solution of ions like these …
    - **A. (Na)+ (Cl_2) +**
    - **B. (Na)- (Cl_2) +**
    - **C. (Na)+ (Cl_2) -**
    - **D. (Na)- (Cl_2) -**

29. Some compounds of copper such as Copper II Sulfate used use a roman numeral in its chemical name. **$Cu(II)SO_4$** The roman numeral is used to show …
    - **A. which ion is used**
    - **B. how the ion is used**
    - **C. the order of ions used**
    - **D. how many ions are used**

30. Generally when looking at patterns in the periodic table this can be said about elements in a group …
    - **A. They all have the same density**
    - **B. They react very violently**
    - **C. They all have the same ion charge**
    - **D. They all have different ion charges**

31. A chemical change, which **releases** energy, is called …
    - **A. exothermic**
    - **B. endothermic**
    - **C. combustable**
    - **D. dangerously reactive**

32. A chemical equation may look complicated, but, by knowing what you know now, it should be much easier to understand

    $$HC_2H_3O_{2(l)} + NaHCO_{3(g)} \rightarrow NaC_2H_3O_{2(aq)} + H_2O_{(l)} + CO_{2(g)}$$

    This chemical equation happens when you mix …
    - **A. vinegar and calcium carbonate**
    - **B. carbon dioxide and flavored water**
    - **C. calcium carbonate and water**
    - **D. vinegar and baking soda**

33. The following word equation identifies what happens when hydrogen peroxide is left out in the sun. It changes to water and oxygen gas.
    - **A. Water + Oxygen ⟶ Hydrogen peroxide**
    - **B. Hydrogen peroxide + Energy ⟶ Water + Oxygen**
    - **C. Water + Energy + Oxygen ⟶ Hydrogen peroxide**
    - **D. Hydrogen peroxide + Oxygen ⟶ Water + Energy**

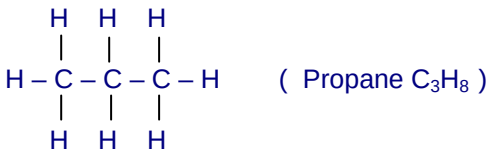
34. To treat an injury in sport, ***cold packs*** are used to reduce the swelling where the injury occurs. These cold packs are examples of …
    - **A. Endothermic reactions**
    - **B. Exothermic reactions**
    - **C. Combustion reactions**
    - **D. Corrosion reactions**

35. Enzymes are catalysts used in our body to break down food. Without the presence of enzyme the reactions in our body would …
    - **A. require much higher temperatures**
    - **B. produce different substances**
    - **C. happen more quickly**
    - **D. not occur at all**

36. Some substances are used in foods to slow down decomposition. Plant seeds prevent germination until the right conditions are present by these natural …
    - **A. reactors**
    - **B. enzymes**
    - **C. catalysts**
    - **D. inhibitors**

37. By crushing a tablet of medicine before you take it, you are changing the reaction rate by changing the …
    - **A. temperature**
    - **B. surface area**
    - **C. concentration**
    - **D. a catalyst**

38. Corrosion protection involves protecting metal from contact with the environment and the factors that affect the reaction rate of this chemical reaction. Coating a corrosive metal with a thin layer of zinc is called …
    - **A. galvanization**
    - **B. sterilization**
    - **C. electrolysis**
    - **D. electroengineering**

39.


(Propane C_3H_8)

The burning of propane (C_3H_8) in a barbeque is an exothermic reaction that produces heat to cook the food. If the heat is too intense, the products being cooked (will be burnt) will be changed into.
    - **A. hydrocarbons**
    - **B. hydrogen dioxide**
    - **C. carbon monoxide**
    - **D. pure carbon**

40. Burning fossil fuels (such as propane) produces carbon monoxide, carbon dioxide, sulfur oxides, nitrogen oxides, smoke, soot, ash and heat. These products are called …
    - **A. pesticides**
    - **B. pollutants**
    - **C. combustibles**
    - **D. hydrocarbons**

Complete the Numerical Response Questions that follow on the next page

Numerical Response Items

1. Match the description of the Theory of Matter with the time it occurred.

   1- Chemists only investigated materials that had a high value to humans
   2- The use of simple tools and the discovery of fire
   3- The work of Dalton suggests matter is made up of elements
   4- A group of Hittites discovered how to extract an element from rock

___2___	___1___	___4___	___3___
Stone Age	Bronze Age	Iron Age	Atomic Theory

2	1	4	3
	.	.	
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

2. The law of **conservation of mass** in a chemical reaction states that the mass of the products will equal the mass of the reactants.

$$Mg_{(s)} + S_{(s)} \longrightarrow MgS_{(s)}$$

24.3 g 32.1 g Mass?

What is the mass of MgS ?

5	6	.	4
	.	.	
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

3. Match the **WHMIS Symbol** with the description of the Hazard.

1 2 3 4

___3___	___1___	___4___	___2___
Toxic	**Biohazard**	**Flammable**	**Oxidizing**

3	1	4	2
	.	.	
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9