Student Name _____ Class _____

1. 

This symbol means …

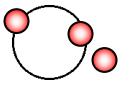
A. toxic
B. reactive
C. corrosive
D. poisonous

2. 

This symbol means …

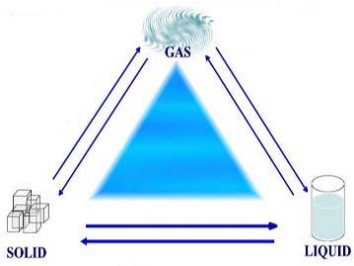
A. toxic
B. reactive
C. corrosive
D. poisonous

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 …

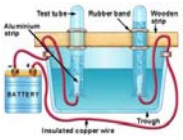
A. reactivity, toxicity, stability, malleability
B. ductility, crystal shape, miscibility, solubility
C. malleability, smell, viscosity, miscibility
D. density, conductivity, combustibility, color

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**

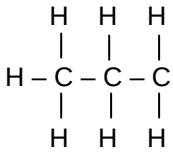
34. To treat an injury in sport, ***cold packs*** are used to reduce the swelling where the injury occurs. These cold packs are examples of …
    - **A. Endothermic reactions**
    - **B. Exothermic reactions**
    - **C. Combustion reactions**
    - **D. Corrosion reactions**

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

_____	_____	_____	_____
Stone Age	Bronze Age	Iron Age	Atomic Theory

	.	.	
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.

$$\underset{24.3\text{ g}}{Mg_{(s)}} + \underset{32.1\text{ g}}{S_{(s)}} \longrightarrow \underset{\text{Mass?}}{MgS_{(s)}}$$

What is the mass of MgS ?

	.	.	
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 

_____	_____	_____	_____
Toxic	**Biohazard**	**Flammable**	**Oxidizing**

	.	.	
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