Name _____

Chemistry Review Packet #1

Multiple Choice

1. Because atoms are so small,
   a. they cannot be made of anything smaller.
   b. scientists created models to describe them.
   c. there is no way to observe them.
   d. they cannot be synthesized by scientists.

2. Scientists' view of what the atom looks like has
   a. remained constant over time.
   b. changed only once.
   c. been finalized..
   d. changed over time due to new discoveries from advances in technology

3. The atom is mostly made up of _____.
   a. empty space
   b. protons
   c. neutrons
   d. electrons

4. This part of the atom has a **negative** charge.
   a. nucleus
   b. proton
   c. neutron
   d. electron

5. This part of the atom has a **neutral** charge.
   a. nucleus
   b. proton
   c. neutron
   d. electron

6. This part of the atom has a **positive** charge.
   a. electron
   b. proton
   c. neutron
   d. none of the above

7. The elements in the periodic table are arranged:
   a. by increasing atomic mass.
   b. alphabetically.
   c. by date of discovery or synthetic preparation.
   d. by increasing atomic number.

8. The smallest part of an element that still has the properties of that element is called a(n) _____.
   a. compound
   b. atom
   c. mixture
   d. molecule

9. Each group or family in the Periodic Table has its own characteristic properties based on their common number of _____.
   a. valence electrons
   b. neutrons
   c. protons
   d. ions

10. Which sub-atomic particles are located in the **nucleus** of the atom?
    a. Electrons and Neutrons
    b. Protons and Neutrons
    c. Protons and Electrons
    d. Protons, Neutrons and Electrons

11. In an atom, the number of protons is also equal to the number of
    a. nuclei.
    b. neutrons.
    c. electrons.
    d. isotopes.

12. The **Atomic Mass** of an element is based on the
    a. number of neutrons in its nucleus.
    b. number of electrons in the valence shell.
    c. number of protons in its nucleus.
    d. mass of its nucleus.

13. The **Atomic Number** of an element is based on the
    a. mass of its nucleus.
    b. number of protons in the nucleus.
    c. number of neutrons in the nucleus.
    d. number of electrons in the electron cloud.

14. If an atom from the Halogen family (group 17) gains one electron in its valence shell, the atom would then have _____.
    a. 18 valence electrons
    b. 17 valence electrons
    c. 8 valence electrons
    d. 7 valence electrons

15. From an element's location on the Periodic Table, you can predict
    a. its name.
    b. its physical and chemical properties.
    c. its chemical symbol.
    d. the year it was discovered.

16. The electrons involved in chemical bonding between atoms are found
    a. inside the nucleus.
    b. closest to the nucleus.
    c. in the valence shell.
    d. all throughout the electron cloud.

17. What holds atoms together in a molecule or a compound?
    a. Magnetism
    b. Gravity
    c. Physical bonds
    d. Chemical bonds (covalent, ionic, metallic)

18. What is the main difference between a molecule and a compound?
    a. A molecule is large, while a compound is small.
    b. A molecule is made up of 2 or more atoms, while a compound must be made up of 2 or more *different* types of atoms.
    c. A molecule can be separated through physical means such as filtration or magnetism.
    d. There is none, molecules and compounds are the same thing.

19. Identify the **compound** from the following list.
    a. CO
    b. O_2
    c. H_2

20. Which of the following is **NOT** a compound?
    a. Water (H_2O)
    b. Baking soda ($NaHCO_e$)
    c. Sugar ($C_6H_{12}O_6$)
    d. Calcium (Ca)

21. An ionic bond is the attraction between
    a. neutral ions.
    b. neutral atoms.
    c. oppositely charged ions.
    d. similarly charged ions.

22. When an atom **gains** an electron, it becomes a
    a. negatively charged ion.
    b. positively charged ion.
    c. neutrally charged ion.
    d. neutrally charged atom.

23. A "cation" is an atom that
    a. is positively charged.
    b. has lost electrons.
    c. will bond with anions to become more stable.
    d. all of the above.

24. Name the following **ionic** compound: $CaCl_2$
    a. Calcium dichloride
    b. Carbon dichloride
    c. Calcium chloride
    d. Carbon chloride

25. Identify the common name of the compound "Sodium chloride?"
    a. Water
    b. Salt
    c. Vinegar
    d. Baking soda

26. Identify the number of oxygen atoms in the following compound: $Be(OH)_2$
    a. 4
    b. 3
    c. 2
    d. 1

27. When two or more atoms **share electrons**, a (n) _____ is formed.
    a. polyatomic bond
    b. ionic bond
    c. chemical bond
    d. covalent bond

28. What happens when chemical bonds break and new bonds form?
    a. A physical change.
    b. A chemical reaction.
    c. Matter is destroyed.
    d. Surface area increases.

29. Identify the reactants in the following equation: **$2\ Mg + O_2 \rightarrow 2\ MgO$.**
    a. 2 Mg
    b. O_2
    c. $2\ Mg + O_2$
    d. 2 MgO

30. Which of the following chemical equations correctly represents the formation of water?
    a. $H_2 + O_2 \rightarrow H_2O$
    b. $2\ H_2 + O_2 \rightarrow 2\ H_2O$
    c. $H_2 + O_2 \rightarrow 2\ H_2O$
    d. $2\ H_2 + 2\ O_2 \rightarrow 2\ H_2O$

31. Which of the following is **NOT** evidence of a chemical change?
    a. A change in texture.
    b. A change in color.
    c. A change in odor.
    d. A change in temperature.

32. One example of a physical change is
    a. burning paper.
    b. baking cookies.
    c. dissolving salt in water.
    d. dissolving a metal in acid.

Use the diagram below to help you answer questions #33-36

Atoms of Various Common Elements

Element	Atomic Number	Mass Number	Protons	Neutrons	Electrons
Sodium	11	?	11	12	?
Magnesium	12	24	12	?	12
Aluminum	?	27	13	14	13
Phosphorus	15	31	?	16	15

33. What is the total number of electrons in an atom of sodium?
    a. 14 c. 12
    b. 13 d. 11

34. How many neutrons are in an atom of magnesium?
    a. 14
    b. 13
    c. 12
    d. 11

35. What is the atomic number of aluminum?
    a. 14
    b. 13
    c. 12
    d. 11

36. How many protons are in an atom of phosphorus?
    a. 31
    b. 16
    c. 15
    d. 14

37. One example of a chemical change is
    a. filtering sand from water.
    b. crushing a can.
    c. boiling water.
    d. burning wood.

38. Substances that **CANNOT** be broken down chemically into other substances are
    a. compounds.
    b. elements.
    c. mixtures.
    d. solutions.

39. The change in which a substance **absorbs** energy and feels colder is
    a. an exothermic change.
    b. an endothermic change.
    c. a physical change.
    d. because of a change in mass.

40. Fireworks exploding in the air and giving off light and heat are an example of a(n)
    a. exothermic change.
    b. endothermic change.
    c. chemical change.
    d. change in mass.

41. If you heat a liquid and measure the temperature at which it boils, you are measuring a(n) _____.
    a. atomic property
    b. chemical property
    c. physical property
    d. molecular property

42. If you describe methane as a gas that easily catches on fire, you are describing a _____.
    a. state of matter
    b. physical property
    c. chemical formula
    d. chemical property

43. You can find the pH of a substance by using
    a. the pH scale.
    b. litmus paper.
    c. a thermometer.
    d. a conductivity tester.

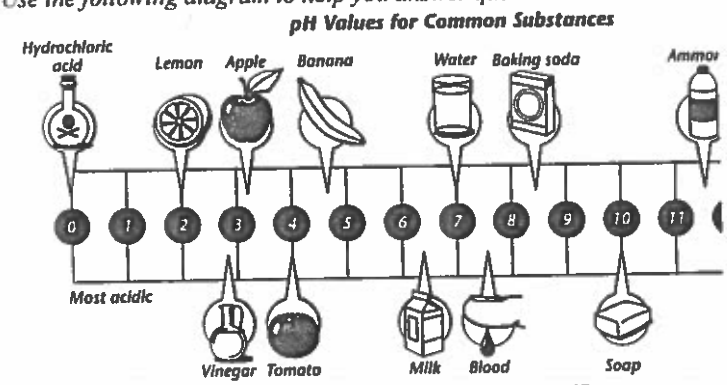
44. Acids are described as being "corrosive" because
    a. litmus paper turns blue.
    b. taste bitter when you eat them.
    c. feel slippery when you touch them.
    d. "eat away" at other materials.

45. Which is a likely use for a base?
    a. As a vitamin in your food.
    b. Etching metals for printing.
    c. Making cleaning supplies, soaps and detergents.
    d. Making foods taste sour.

46. The best way to separate **iron filings** from a mixture of iron filings, sand, gravel, salt and water would be by using _____.
    a. Evaporation
    b. Magnetism
    c. Chromatography
    d. Filtration

47. The process that separates substances in a heterogeneous mixture through the use of a screen, coffee filter, mesh, etc., is called _____.
    a. Magnetism
    b. Filtration
    c. Chromatography
    d. Evaporation

Use the following diagram to help you answer questions 48-51.



48. Which of the following substances is neutral?
    a. Lemon
    b. Ammonia
    c. Water
    d. Blood

49. Which of the following substances is an **acid**?
    a. Vinegar
    b. Ammonia
    c. Sodium Hydroxide
    d. Water

50. Which of the following substances is a **base**?
    a. Milk
    b. Ammonia
    c. Apple Juice
    d. Banana

51. Which would you want to handle with caution?
    a. Hydrochloric acid
    b. Drain Cleaner
    c. Ammonia
    d. All of the above

52. Lemonade consists of several substances that are **NOT** chemically combined, so lemonade is classified as a (n) _____.
    a. element
    b. compound
    c. pure substance
    a. mixture

53. A measure of how well a solute can dissolve in a solvent is known as
    a. the saturation point.
    b. solubility.
    c. acidity.

54. How is a solute different from a solvent ?
    a. The solvent dissolves the solute.
    b. The solute dissolves the solvent.
    c. The solute is always solid, and the solvent is always liquid.
    d. The solute is always liquid, and the solvent is always solid.

55. When a few spoonful of sugar are mixed into a cup of water, the sugar is the
    a. base.
    b. acid.
    c. solute.
    d. solvent.

56. Mixtures can be heterogeneous or homogeneous. Which of the following is the identifying trait of a **homogeneous** mixture?
    a. A mixture in which the individual components are distinguishable in the mixture.
    b. A mixture in which large particles become suspended.
    c. A mixture in which the individual components are evenly distributed throughout, and you cannot see the individual substances.
    d. A mixture in which the large particles settle to the bottom.