

Name: _____ Date: _____

7th Grade Mid-Term Exam

Choose the letter of the best answer. Put the answer on the line provided. (4 points each)

- _____ 1. Which element is most common in both Earth's crust and the human body?
- Oxygen
 - Silicon
 - Hydrogen
 - Carbon
- _____ 2. The positively charged particles in an atom are
- electrons
 - neutrons
 - nuclei
 - protons
- _____ 3. Nitrogen-14 and Nitrogen-15 are examples of
- Isotopes
 - Ions
 - Protons
 - Neutrons
- _____ 4. A sodium atom has a charge of $1+$. It must have one
- more proton than usual
 - more neutron than usual
 - fewer neutron than usual
 - fewer electron than usual
- _____ 5. Two atoms have the same number of protons. They must be
- isotopes of each other
 - atoms of the same element
 - identical in atomic mass numbers
 - neutrally charged

Name: _____ Date: _____

- _____ 6. The properties of chemical compounds
- are often different from the properties of the elements that make up the compounds
 - are always the same as the properties of the elements that make up the compounds
 - are not always predictable
 - can change without warning
- _____ 7. The chemical formula for the simplest sugar called glucose is $C_6H_{12}O_6$. What does the formula tell you?
- Glucose has a boiling point of 230 degrees C.
 - Glucose has six atoms of carbon to twelve atoms of hydrogen to six atoms of oxygen.
 - Glucose is held together by metallic bonds
 - Glucose has three atoms of carbon to eleven atoms of hydrogen to five atoms of oxygen.
- _____ 8. Polar covalent bonds are formed when
- electrons are transferred
 - electrons are shared unequally
 - electrons are lost
 - electrons are shared equally
- _____ 9. A molecule is a particle formed as a result of
- losing electrons
 - gaining electrons
 - exchanging electrons
 - sharing electrons
- _____ 10. A magnesium ion has a net charge of $2+$. A fluorine ion has a net charge of $1-$. What kind of compound will these two ions form and what is the compound's name?
- MgF_2 (Magnesium flourate)
 - Mg_2F (Magnesium flourate)
 - MgF_2 (Magnesium fluoride)
 - iMg_2F (Magnesium fluoride)

Name: _____ Date: _____

- _____ 11. Carbon can combine with oxygen to form carbon monoxide, carbon dioxide, and carbon suboxide. What can you say for certain about these three compounds?
- Each compound must have the same ratios of carbon atoms to oxygen atoms.
 - Each compound probably has unique properties.
 - Because they are made of the same kinds of atoms, all of these compounds have the same properties.
 - Although they contain different ratios of the same elements, all of these compounds have the same properties.
- _____ 12. The type of chemical bond that forms between atoms of two different elements is determined by the
- way atoms move
 - number of neutrons in the atoms
 - the number of atoms present
 - way in which the electron clouds interact
- _____ 13. What makes metals ideal for making coins?
- Electrons form bonds in all directions, so metal takes a circular shape.
 - Metal atoms form bonds of various sizes, so metal are used for different sizes of coins.
 - Electrons move freely among metal atoms, so the metal can be formed into different shapes.
 - Metal atoms form rigid bonds, so the coins retain their shape.
- _____ 14. What explains how carbon can exist in three different forms?
- Ionic bonds among carbon atoms do not form individual molecules
 - Covalent bonds among carbon atoms do not form individual molecules.
 - Carbon atoms clump together without bonding.
 - There are three different types of carbon atoms.
- _____ 15. Most ionic compounds
- dissolve easily in water, and the solution conducts electricity
 - dissolve easily in water and are liquid at room temperature
 - do not dissolve in water, but their crystal structure conducts electricity
 - do not dissolve in water and have a low melting and boiling points

Name: _____ Date: _____

- _____ 16. What is an example of water undergoing a chemical change?
- boiling water
 - freezing water
 - breaking down water to form hydrogen and oxygen
 - adding sugar to water to create a sweet liquid
- _____ 17. Iron combines with oxygen in the air to form rust. Rust is an example of a(n)
- element
 - subscript
 - product
 - reactant
- _____ 18. Which type of reaction occurs when a more complex compound is formed by the combination of simpler reactants?
- decomposition reaction
 - combustion reaction
 - synthesis reaction
 - physical reaction
- _____ 19. After a reaction is completed, a catalyst
- is unchanged
 - has become a product
 - has broken down completely
 - has become smaller
- _____ 20. When a piece of paper burns, smoke and ashes are produced. Which of the following statements is true?
- Some of the mass is transformed into a gas.
 - Some of the mass is destroyed completely.
 - All of the mass is transformed into gas.
 - All the mass remains in a solid form.
- _____ 21. In the equation $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$, the coefficients of the N_2 in the reactants is
- 1
 - 2
 - 3
 - 6

Name: _____ Date: _____

- _____ 22. All chemical reactions involve
- the formation of a precipitate
 - the formation of a gas
 - a change in color of the reactants
 - either absorption or release of energy
- _____ 23. What type of chemical reaction releases more energy when the products form than it uses to break the bonds in the reactants?
- a reaction that occurs at low temperatures
 - a reaction that occurs at high temperatures
 - an exothermic reaction
 - an endothermic reaction
- _____ 24. In living cells, enzymes aid the respiration process by
- slowing it
 - speeding it
 - providing oxygen
 - providing water
- _____ 25. The reactants for reactions that occur in a catalytic converter are the
- reactants of a combustion reaction
 - products of a combustion reaction
 - products of a synthesis reaction
 - catalysts of a synthesis reaction
- _____ 26. The components of solutions are
- mixed evenly throughout and cannot be separated
 - clumped together and cannot be separated
 - mixed evenly throughout and can be separated
 - clumped together and can be separated
- _____ 27. In a solution of two liquids, which is the solute and which is the solvent?
- The substance that can become a solid or gas more readily is the solute.
 - The substance that is denser is the solute.
 - The substance that was present first is the solvent.
 - The substance present in the greatest concentration is the solvent.

Name: _____ Date: _____

- _____ 28. What happens to a glass of pure water and a glass of salt water at 0 degrees C?
- Pure water freezes, but the salt water stays liquid.
 - The salt water freezes, but the pure water stays liquid.
 - Both the pure water and salt water freeze.
 - Neither the pure water nor the salt water freezes.
- _____ 29. Another name for a hydrogen ion is
- pH
 - an electron
 - a proton
 - a neutron
- _____ 30. To decrease the concentration of a solution, you can increase the
- temperature
 - amount of solute
 - amount of solvent
 - pressure
- _____ 31. When an acid such as hydrochloric acid is added to water, it
- breaks up almost completely into ions
 - remains mostly as hydrogen chloride molecules
 - forms many hydroxide ions
 - is neutralized and becomes water
- _____ 32. Which statement best describes how molecular structures influence the formation of solutions.
- Solvents with polar bonds attract solutes with polar bonds to form solutions.
 - Solvents with polar bonds attract solutes with non polar bonds to form solutions.
 - Solvents with polar bonds attract both solutes with polar bonds and solutes with non polar bonds to form solutions.
 - Solvents with polar bonds repel all solutes and do not easily form solutions.
- _____ 33. The difference between acids and bases is whether they
- accept or donate protons
 - absorb or give off heat
 - give off heat or light energy
 - can dissolve substances or not

Name: _____ Date: _____

- _____ 34. Metal alloys are usually formed by
- mixing and cooling liquid metals
 - mixing solid metals and using electricity
 - removing the impurities from metals
 - increasing the concentration of metals
- _____ 35. Which of the following is an alloy
- iron
 - steel
 - nickel
 - gold
- _____ 36. Diamond, graphite, and carbohydrates are
- carbon-based compounds that are made by living organisms
 - carbon-based compounds that do not exist in nature
 - organic compounds that contain carbon
 - inorganic compound that contain carbon
- _____ 37. Which choice explains the very large number of carbon-based molecules that exist?
- Carbon atoms are found in all non living things.
 - Carbon is a non-reactive element.
 - Carbon atoms form four covalent bonds.
 - Carbon can bond with all elements except itself.
- _____ 38. The chemical formula of an organic molecule is C_2H_2 . How must the atoms be bonded together?
- The carbon atoms form a triple bond with each other.
 - The hydrogen atoms form a triple bond with each other.
 - The carbon atoms form a double bond with the hydrogen atoms.
 - The carbon atoms form a single bond with each other and with the hydrogen atoms.
- _____ 39. The chemical formula of propane is C_3H_8 . The chemical formula of cyclopropane is C_3H_6 . Are these compounds isomers?
- Yes, because they have similar names.
 - Yes, because they have the same number of carbon atoms.
 - No, because they have even numbers of hydrogen atoms.
 - No, because they have different number of hydrogen atoms.

Name: _____ Date: _____

- _____ 40. Which of the following is correct?
- Sugars are carbohydrates, and fats are lipids.
 - Proteins are carbohydrates, and enzymes are lipids.
 - Starches are lipids, and fats are carbohydrates.
 - Nucleic acids are lipids, and enzymes are carbohydrates.
- _____ 41. What determines the structure of a protein?
- the number of enzymes it contains
 - the order of the amino acids that form it
 - the shape of the materials it transports
 - the types of enzymes in the protein
- _____ 42. What are enzymes and why are they important to living things?
- They are nucleic acids that contain information to make proteins.
 - They are nucleic acids that determine every characteristic of a living thing.
 - They are proteins that control chemical reactions in nonliving things.
 - They are proteins that control chemical reactions in living organisms.
- _____ 43. A sequence of three DNA bases provides the code for
- a lipid with three fatty acids
 - a starch containing three glucose molecules
 - an amino acid for a protein
 - a complete protein molecule
- _____ 44. Two fibers made by changing the monomers in nylon are
- celluloid and plastic
 - styrofoam and cellulose
 - kevlar and nomex
 - teflon and bakelite
- _____ 45. What determines the properties of a polymer?
- the number of isotopes that make up its structure
 - the number of electrons that the carbon atoms give up
 - the number, type, and arrangement of the plastics that form the polymer
 - the number, type, and arrangement of the monomers that form the polymer

Name: _____ Date: _____

- _____ 46. Which of these choices best describes atoms?
- elements made up of compounds, mixtures, and alloys
 - elements made up of molecules, ions, and solutions
 - matter made up of elements, compounds, and mixtures
 - matter made up of electrons, protons, and neutrons
- _____ 47. Cells get energy from
- glucose molecules through the process of respiration
 - glucose molecules through the process of photosynthesis
 - hydrocarbons through the process of respiration
 - hydrocarbons through the process of photosynthesis
- _____ 48. What happens during a chemical reaction?
- New atoms are formed by synthesis or combustion.
 - Catalysts change into other substances as bonds break and form.
 - Precipitates break apart and form new products.
 - Bonds in reactants are broken, and new bonds form to make new products.
- _____ 49. What does the law of conservation of mass say about a chemical reaction?
- Atoms are neither created nor destroyed.
 - Compounds are neither created nor destroyed.
 - Subscripts are neither created nor destroyed.
 - Coefficients are neither created nor destroyed.
- _____ 50. What makes alloys useful?
- Their properties make them more suitable for certain uses than the metals that form them.
 - They all contain rare earth elements.
 - They all contain carbon.
 - Their properties are identical to the properties of the metals that form them.

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____