

Biology 1

Biochemistry Test

Vocabulary: Match the descriptions/definitions on the left with the appropriate terms on the right and place the correct letter in the blank. Not all terms are used. (1pt each)

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|--|--------------------------|
| 1. Process that forms large molecules from smaller molecules. | a. Condensation reaction |
| 2. Huge, complex organic molecules. | b. Covalent |
| 3. Compounds with the same chemical formula but different arrangement of its atoms (structure) | c. Enzymes |
| 4. Proteins that <i>catalyze</i> reactions in living systems. | d. Functional group |
| 5. Smaller, simple single units acting as the <i>building blocks</i> for larger organic molecules. | e. Hydrogen |
| 6. The special type of bond linking amino acids together. | f. Hydrolysis |
| 7. Type of chemical reaction that adds a molecule of water. | g. Isomer |
| 8. Repeating linked single organic compounds bonded together to form a larger molecule. | h. Macromolecules |
| 9. The reactant being catalyzed in a chemical reaction. | i. Monomer |
| 10. Clusters of atoms that influence the properties of the compound they are attached to. | j. Peptide |
| | k. Polymer |
| | l. Reactant |
| | m. Substrate |

True-False: If the statement below is TRUE write T in the blank. If it is FALSE, write F in the blank, and then change the underlined section to make the statement true! (2pts each)

1. The number of covalent bonds a carbon atom can make is 4.
2. A functional group changes the structure of a compound, but does not alter its chemical properties.
3. In a double covalent bond, 2 electrons are shared between two atoms.
4. Fatty acids become linked together by covalent bonds during hydrolysis reactions.
5. Enzymes are affected by temperature or pH.
6. An element is a pure substance that cannot be broken down into other substances by physical or chemical means.
7. If a neutral atom contains 18 protons it also contains 18 neutrons.
8. An ionic bond is formed when two atoms shared electrons.
9. When an endothermic chemical reaction takes place, heat is released into the environment.

Multiple Choice: Write the letter on the line that is the best answer. (1 pt each)

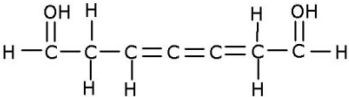
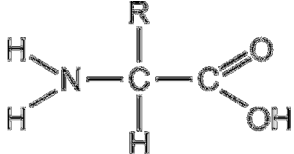
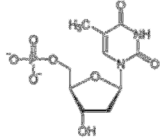
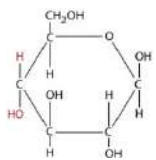
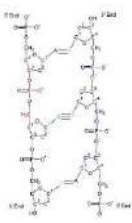
- Water is an effective solvent because
 - It is a polar molecule.
 - It dissolves other polar substances
 - It dissolves ionic compounds
 - All of the above
- ATP release energy when
 - It undergoes a condensation reaction
 - A hydroxyl group is added to it.
 - A phosphate group is added to it.
 - A phosphate group is removed from it.
- The breakdown of polymers into monomers occurs through a process known as
 - Hydrolysis
 - condensation
 - dissociation
 - removal of a functional group
- Enzymes are "*specific*" means
 - They cannot be reused
 - They act with only one substrate
 - They act with a variety of substrates
 - They become inactive at high temperature
- A compound found in living things that supplies the energy in one of its chemical bonds directly to cells is
 - Phosphate
 - RNA
 - ATP
 - glucose
- Which is an example of a chemical reaction?
 - Ice melting
 - Iron rusting
 - sugar dissolving in water
 - water evaporating
- When paper burns in a fire, what is one reactant?
 - Fire
 - Carbon dioxide
 - oxygen
 - water
- How does the enzyme influence a biological reaction
 - It increases the net energy difference between reactants and products
 - It decreases the activation energy necessary to initiate the chemical change
 - It increases the kinetic energy of reactants, thereby increasing their tendency to collide.
 - It decreases the kinetic energy of reactants, enabling them to undergo chemical change more easily.
- A hydrogen bond forms between a hydrogen atom of one molecule and which atom of another molecule?
 - Carbon
 - Hydrogen
 - oxygen
 - sodium
- Amino Acids are the building blocks of which macromolecule?
 - Carbohydrate
 - DNA
 - lipid
 - protein

11. Which category of carbon-based molecules includes sugars and starches?
 - a. Unsaturated fatty acids
 - b. Proteins
 - c. Phospholipids
 - d. Carbohydrates
12. Fats, oils, and cholesterol are all types of
 - a. Cell membranes
 - b. Lipids
 - c. Hormones
 - d. Fatty acids
13. DNA and RNA are two types of
 - a. Proteins
 - b. Lipids
 - c. Nucleic acids
 - d. carbohydrates
14. Atoms form bonds with other atoms
 - a. To form compounds
 - b. To fill their valence shell
 - c. To be stable like the Noble Gases
 - d. All of the above
15. An example of a base is
 - a. Vinegar
 - b. pH 7-14
 - c. ammonia
 - d. both b and c

Completion: Complete each statement. Write your word/s on the blank. (1 pt each)

1. The _____ end of a phospholipid forms the outer layer of a cell membrane, while the _____ fatty acid chains are intertwined on the inside of the phospholipid bilayer.
2. _____ is the property of water that means water will stick to other substances allowing water to climb the stem of a plant against gravity.
3. Water has a _____, meaning it must absorb a lot of energy in order to change temperature.
4. Atoms with a high concentration of H^+ atoms are _____.
5. A _____ has the ability to bond with H^+ atoms in an acidic solution to produce water and help neutralize the solution.

Monomers Structure Identification: Match the letter that identifies each of the structures below. (1pt)

<p>1. </p>	<p>2. </p>	<p>3. </p>
<p>4. </p>	<p>5. </p>	<p>A. Saturated Fatty Acid B. Amino Acid C. Nucleotide D. RNA E. Unsaturated Fatty Acid F. Glucose G. Fructose H. DNA</p>

Matching: Match the correct term with each of the descriptions under the different ORGANIC groups listed below and place the letter in the blank. Not all terms are used! (1 pt each)

A. Carbohydrates:

1. The monomer of a carbohydrate
2. The general function of carbohydrates
3. An example of a polysaccharide

B. Lipids

1. The monomer of a lipid
2. The general function of lipids
3. Polymers providing water-proofing
(for various organisms- plants & animals)

C. Proteins

1. The monomer of a protein
2. The function of proteins
3. Many bonded proteins monomers

D. Nucleic Acids

1. The monomer of a nucleic acid
2. The general function of nucleic acid
3. The polymer of nucleic acid

- a. Amino acid
- b. Deoxyribonucleic acid (DNA)
- c. Enzymes
- d. Fatty acid
- e. Glucose (a monosaccharide)
- f. Glycogen
- g. Nucleotide
- h. Phospholipids
- i. Polypeptide
- j. Starch
- k. Steroids
- l. Triglyceride
- m. Waxes
- n. To carry genetic information in coded form and direct cell activities
- o. To provide a concentrated source of energy
- p. To provide a source of quick energy
- q. To be used for building tissues and regulating chemical reactions