1. Which of the following is an example of a hydrogen bond? (1990:9)

a. The peptide bond between amino acids in a protein

b. The bond between an oxygen atom and a hydrogen in the carboxyl group of a fatty acid.

c. The bond between Na+ and Cl-in salt

d. The attraction between a hydrogen of one water molecule and the oxygen of another

water molecule.

e. The bond between carbon and hydrogen in methane

2. A feature of organic compounds NOT found in inorganic compounds is the presence of

(1994:10)

a. ionizing chemical groups

b. electrons

c. carbon atoms covalently bonded to each other

d. oxygen

e. hydrogen bonds

3. The bonding of two amino acid molecules to form a larger molecule requires

a. the release of a water molecule

b. the release of a carbon dioxide molecule

c. the addition of a nitrogen atom

d. the addition of a water molecule

e. an increase in activation energy

4. Which of the following best characterizes the reaction represented below (1999:14)

**A + B + energy → AB**

a. hydrolysis

b. catabolism

c. oxidation-reduction

d. exergonic reaction

e. endergonic reaction

5. Which of the following can be used to determine the rate of enzyme-catalyzed reactions

(1994:37)

a. rate of disappearance of the enzyme

b. rate of disappearance of the substrate

c. rate of disappearance of the product

d. change in volume of the solution

e. increase in activation energy

6. The secondary structure of a polypeptide is primarily determined by which of the following?

(A) Hydrogen bonding

(B) The number of amino acids

(C) NADH

(D) Golgi apparatus

(E) Ribosomes

7. Hydrogen bonds occur

(A) between nonpolar substances

(B) between adenine and thymine

(C) between phosphate and deoxyribose in DNA

(D) when a hydrogen and an oxygen in a water molecule share electrons

8. Which of the following statements is/are true with regard to a polymer of 6 glucose molecules?

I. The chemical formula is C36H72O36

II. The chemical formula is C36H62O31

III. The monomers of glucose were joined via hydrolysis

IV. The monomers of glucose were joined via dehydration synthesis

(A) I only

(B) II only

(C) IV only

(D) I and III only

(E) II and IV only

9. Which of the following statements regarding lipids is most accurate?

(A) Lipids are synthesized by ribosomes.

(B) The empirical formula for lipids is typically C1H2O1.

(C) Saturated fats tend to be solid at room temperature because of polar hydrocarbon chains.

(D) Saturated fats tend to be liquid at room temperature due to hydrogen bonding.

(E) Polyunsaturated fats tend to be liquid at room temperature due to numerous double bonds in the

hydrocarbon chains.

10. DNA codes for 20 different amino acids. Which of the following is responsible for making each of the amino acids unique from one another?

(A) hydroxyl group

(B) sulfhydryl group

(C) amino group

(D) methyl group

(E) “R” group

11. The insolubility of fats in water is due primarily to

(A) the many nonpolar C-H bonds

(B) the ester linkage between a hydroxyl group and a carboxyl group

(C) the presence of glycerol in the structure makeup

(D) the variety of fatty acids in a fat molecule

(E) the large number of double bonds between carbon atoms

12. A polymer of glucose that serves as a storage macromolecule in animals is

(A) chitin

(B) starch

(C) glycogen

(D) cellulose

(E) amylase

13. Polysaccharides are best described as:

(A) complex molecules such as starches that are composed of many chains of sugar monomers

(B) chains of amino acids joined by peptide bonds

(C) molecules made of glycerol and three fatty acid chains

(D) nucleotides arranged in a helical pattern

(E) a five- or six-carbon sugar molecule bonded to an aldehyde or ketone group

14. Storage of fat by the body is advantageous primarily because fats

(A) are insoluble and chemically stable

(B) yield, gram for gram, more than twice as much energy as complex carbohydrates

(C) can be digested with less energy and fewer enzymes than carbohydrates and proteins

(D) store almost all potential energy in chemical bonds

(E) are much easier to produce from surplus molecules that have been broken down by digestive enzymes

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