

Name: _____
Due: at the beginning of class Feb 2, 2007

Chapter 2 Take-Home Quiz
Worth 20 pts

- How do the isotopes of carbon (Carbon-12 and Carbon-14) differ?
 - Carbon 12 forms hydrogen bonds, carbon-14 doesn't
 - Carbon-14 has a positive charge and Carbon-12 has a neutral charge
 - They have different numbers of neutrons
 - Carbon-12 has a negative charge and Carbon-14 has a neutral charge
 - They have different valence numbers
- What are the four most abundant elements found in biological molecules?
 - Hydrogen, Sulfur, Nitrogen, and Oxygen
 - Carbon, Oxygen, Hydrogen, and Nitrogen
 - Phosphorus, Hydrogen, Carbon, and Oxygen
 - Carbon, Oxygen, Nitrogen, and Sulfur
 - Carbon, Hydrogen, Sulfur and Phosphorus
- Which of the following would you predict about an ion?
 - The electrons would be found in the nucleus.
 - The nucleus would contain fewer than six neutrons.
 - The number of electrons and protons would not be equal.
 - No neutrons would be found in the nucleus.
 - It would covalently bond with water.
- A polar bond is a special type of covalent bond. Why are some covalent bonds described as being polar?
 - They form between isotopes with different atomic masses.
 - They form between radioactive isotopes.
 - They are stronger than regular covalent bonds.
 - They have an unequal distribution of electrons around the nuclei.
 - They commonly between carbon atoms.
- Only some hydrogen atoms are capable of forming hydrogen bonds. Which of the following characteristics distinguishes those hydrogen atoms that can form hydrogen bonds from those hydrogen atoms that cannot form hydrogen bonds?
 - They are ions and have a negative charge
 - They form covalent bonds with carbon atoms
 - They attract other hydrogen atoms
 - They are participating in a polar covalent bond
 - They are covalently linked to other hydrogen atoms
- Which of the following elements has a valence number of 4?
 - Hydrogen
 - Carbon
 - Sulfur
 - Phosphorus
 - Oxygen
- Which of the following chemical interactions involves sharing of electrons between two atomic nuclei?
 - Covalent Bond
 - Hydrogen Bond
 - Hydrophobic Interaction
 - Ionic Bond
 - Isobond
- How does an atom with a valence number of 1 differ from an atom with a valence number of 2?
 - The atom with the valence number of 2 has twice the electrons as the atom with the valence number of 1.
 - The atom with the valence number of 2 is more electronegative than the atom with the valence number of 1.
 - The atom with the valence number of 2 can form twice as many covalent bonds as the atom with the valence number of 1.
 - The atom with the valence number of 2 is twice as large as the atom with the valence number of 1.
 - The atom with the valence number of 2 has one more electron than the atom with a valence number of 1.
- Why are water molecules cohesive?
 - because they create surface tension
 - because they form hydrogen bonds
 - because they contain hydrogen
 - because they stick to other polar molecules
 - because they are repelled by nonpolar molecules
- Which of the following functional groups is most hydrophobic?
 - Methyl Group
 - Keto Group
 - Phosphate Group
 - Carboxyl Group
 - Amine Group
- Life on earth is said to be carbon-based. Which of the following characteristics of carbon allow it to have a central role in biochemistry?
 - Carbon can hydrogen bond with water.
 - Carbon is an electronegative atom.
 - Carbon has a valence # of 4.
 - Carbon has more electrons than protons.
 - Carbon is easily soluble in water.

11. The oil found in olives represents a storage form of energy for the olive seed. What type of biomolecule is olive oil?

- A. Nucleic Acid
- B. Protein
- C. Triglyceride
- D. Phospholipid
- E. Chitin

12. The conserved portion of an amino acid has which of the following functional groups?

- A. a sulfhydryl group and a phosphate group
- B. a hydroxy group and a phosphate group
- C. a carboxyl group and a phosphate group
- D. a carboxyl group and an amino group
- E. a methyl group and an amino group

13. Which of the following is more hydrophobic?

- A. Amino Acids
- B. Triglycerides
- C. Glucose
- D. Starch
- E. Glycogen

14. Which of the following types of reactions best describes the process by which starch breaks down to form glucose?

- A. Oxidation
- B. Reduction
- C. Condensation
- D. Hydrolysis
- E. Synthesis

15. The Cell Wall of plants is made of which of the following macromolecules?

- A. Protein
- B. Cellulose
- C. Triglycerides
- D. DNA
- E. Lipids

16. Which of the following macromolecules would you expect to find a nitrogenous base?

- A. Protein
- B. Cellulose
- C. Triglycerides
- D. DNA
- E. Lipids

17. Which of the following provides long-term energy storage for plants?

- A. glucose
- B. glycogen
- C. starch
- D. cellulose
- E. ATP

18. Cholesterol, testosterone, estrogen and ecdysone are all examples of

- A. fatty acids.
- B. proteins.
- C. steroids.
- D. hormones.
- E. waxes.

19. Of what are the molecules in butter composed of?

- A. three glycerols and their fatty acids
- B. three fatty acids and one glycerol
- C. one glycogen and two phospholipids
- D. two fatty acids and one carboxyl acid
- E. three oils and one glycerol

20. What determines the specific function of a protein?

- A. exact sequence of amino acids
- B. number of disulfide bonds
- C. a hydrophilic "head" attached to a hydrophobic "tail"
- D. fatty acids as monomers
- E. the number of peptide bonds it contains

21. Which of the following best describes the function of triglycerides?

- A. Structural component of cells
- B. Storage form of energy
- C. Backbone of biological membranes
- D. A subunit making up cholesterol
- E. A molecule made of 4 interlocking carbon rings

22. Polysaccharides are composed of which of the following subunits?

- A. Amino Acids
- B. Fatty Acids
- C. Alanines
- D. Nucleic Acids
- E. Sugars

23. Proteins have which of the following functions?

- A. Structural
- B. Hormones
- C. Enzymes
- D. Transport Molecules
- E. All of the above

24. Which of the following correctly matches an organic polymer with its respective monomers?

- A. protein and amino acids
- B. carbohydrates and polysaccharides
- C. hydrocarbon and monosaccharides
- D. lipid and steroids
- E. DNA and ATP

25. Triglycerides with saturated fatty acids _____.

- A. have not double covalent bonds
- B. are solid at room temperature
- C. Contain the maximum number of hydrogen atoms
- D. A and B are correct
- E. A, B and C are correct.

