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**Chapter 6-4 Study Guide**

Use chapter 6-4 in the text packet provided in class, your notes and/or reference resources to answer the following questions

\_\_\_\_\_\_\_ 1. When liquid water is heated, most of the thermal energy that the water initially absorbs is used to

* 1. Break hydrogen bonds between water molecules
	2. Breaks covalent bonds within every water molecule
	3. Increase the motion of the water molecules
1. Outline the section titled “Organic Chemistry” (pg. 166)

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1. Carbon can bond to carbon to form a variety of organic compounds. These carbon atoms can bond in a way to make compounds of different shapes. What are the three descriptions of the shapes that organic compounds can make?

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1. Define macromolecules/polymers:

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1. Polymers are molecules made from repeating subunits of identical or nearly identical compounds generically called: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Monomers are linked together by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to form polymers/macromolecules
3. What are the 4 most common elements found in organic compounds/in living things? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What are the four classes of organic compounds/macromolecules (Excluding vitamins – which might be a 5th runner up!)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What are the general functions of
	1. Carbohydrates: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* 1. Lipids: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* 1. Proteins: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* 1. Nucleic acids: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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\_\_\_\_\_\_ 10. Glucose is a

1. monosaccharide C. polysaccharide
2. disaccharide D. protein

\_\_\_\_\_\_\_ 11. Sucrose (table sugar) and lactose (milk sugar) are both examples of a

1. monosaccharide C. polysaccharide
2. disaccharide D. protein

\_\_\_\_\_\_ 12. Glycogen, starch and cellulose are all examples of a

1. monosaccharide C. polysaccharide
2. disaccharide D. protein

13. Examples of polysaccharides are glycogen, starch and cellulose. All three are polysaccharides made of repeating glucose molecules.

Which **one** is found in animals?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Which **two** are components of plants? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Plant cell walls make up the “fiber” in our diet. Which polysaccharide is fiber? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. List the following in order from SMALLEST to LARGEST: glycogen, glucose, sucrose

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15. Carbohydrates are short-term energy storage. Name both the monomer and polymer forms of carbohydrates used for energy in animals:

Monomer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Polymer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16. Plants use starch for carbohydrate storage and cellulose as a major component of their cell walls. Starch and cellulose are both polysaccharides, what is the monosaccharide that both of these polysaccharides consist of? (HINT: what monosaccharide makes up the polysaccharide glycogen in animals?)

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\_\_\_\_\_\_\_17. Of the four versions of lipids listed below, which specific type of lipid makes up the majority of cell membrane structure?

1. wax B. fat C. phospholipid D. oil

18. Some insects have a coating of wax on the outer surface of their body. What function might the wax serve for these animals?

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19. Both carbohydrates and lipids play a role in “energy” for living things. Which one is mainly for long-term storage of energy? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_ 20. The image below is a ring-shaped organic structure. Which organic monomer is it an example of?

|  |  |
| --- | --- |
| Structural formula for α- D -glucose | 1. monosaccharide (carbohydrate)
2. amino acid (protein)
3. fatty acid (lipid)
4. nucleotide (nucleic acid)
 |