

Name: _____ Date: _____ Per. _____

CHAPTER 5 STUDY QUESTIONS, part 1 – Polymers, Carbs, & Lipids

1) Distinguish between a **POLYMER** and a **MONOMER**. Give an example of each.

2) Summarize THREE key differences between a **condensation reaction (a.k.a. dehydration)** and a **hydrolysis reaction**.

3) What are the four classes of organic compounds that make up living things? Give an example of a specific compound in each of the four classes.

Class of organic compound:	Example:
A)	
B)	
C)	
D)	

4) In general, what is the **FUNCTION** of each of the four classes of organic compounds you listed above?

A)

C)

B)

D)

5) How many molecules of water are needed to completely hydrolyze a polymer that is ten monomers long? Explain.

6) Suppose you eat a serving of fish. What reactions must occur for the amino acid monomers in the protein of the fish to be converted to new proteins in your body? Explain.

7) What is the **general** chemical formula for a monosaccharide? _____ Write the formula for a monosaccharide that has **3 carbons**: _____

8) Which 2 functional groups are found on sugars? _____,

9) What is the name of the bond joining 2 monosaccharides together? _____

10) List 2 energy-storage polysaccharides: _____,

11) List 2 structural polysaccharides: _____,

12) A dehydration reaction joins two glucose molecules to form the disaccharide maltose. The formula for glucose is $C_6H_{12}O_6$. What is the formula for maltose? Explain.

13) APPLY: After a cow is given antibiotics to treat an infection, a vet gives the animal a drink of “gut culture” containing various prokaryotes. Why is this necessary?

12) In the space below, list AND sketch the components of a **FAT**.

11) What is the NAME of the bond that links a fatty acid to a glycerol molecule? Which two functional groups are involved in the formation of this bond?

12) Distinguish among saturated fats, monounsaturated fats, and polyunsaturated fats (how are they different in terms of their chemical structure?). Give an example of each.

13) a) Explain why unsaturated fats are generally liquids at room temperature.

b) What is meant by “hydrogenated” vegetable oils? Why is this process done?

14) What is “atherosclerosis”? What causes it? What is the result of this condition on an individual’s blood flow?

15) In the space below, sketch and label a **simplified** diagram of a **phospholipid** symbol (see figure 5.12c).

16) a) Why is it that phospholipids show ambivalent behavior towards water?

b) Explain how phospholipids are arranged at the surface of a cell membrane.(use a labeled sketch if necessary)

17) a) List two reasons why we need **cholesterol** in our bodies.

b) Why is too much cholesterol in our diet bad for our health?