Name _____ Period _____ Date/Day_____

Macromolecule - STUDY GUIDE - biology A

LT1: Identify and explain the four categories of macromolecules

1. What are the three major elements that make up a macromolecule? (LT1_MTS)

2. Define the following terms: (LT1_ADV)
   A. Polymer: _____
   B. Monomer: _____

3. Create a table and list (from memory) each of the four categories of **macromolecule** and their **monomers**. (LT1_ADV).

4. Given a real-life structure or function of an organism - be able to identify the **monomer** or **polymer** that best matches. (LT1_MAS)
   A. Bang on your desk and yell it - because wood is made of: _____
   B. You cook down meat until it dissolves in soup and even add some meat tenderizer: _____
   C. Pasta, bread, potatoes - all contain this: _____
   D. Fruit has what sugar that gives you energy: _____
   E. The main thing used by nearly everything for energy: _____

LT2: Explain the function of each category of macromolecule

5. Create a table and be able to list the four biological macromolecules and their functions. (LT2_MTS)

6. Given a scenario, be able to match it to the appropriate macromolecule. (LT2_ADV)

   A. Which macromolecule is used by marine mammals as insulation against the cold? _____

   B. Which macromolecule would be involved in passing on hair color from parent to offspring? _____

   C. Which macromolecule would a bee's wax be made of? _____

   D. Which macromolecule makes up the paper this awesome study guide is printed on? _____

7. You are given a list of food to pick up from the store - identify each think on that list as either a **protein**, **simple carbohydrate**, **complex carbohydrate**, **unsaturated fat**, or **saturated fat**. (LT2_MAS)

   A. Carrots _____
   B. Turkey _____
   C. Bread _____
   D. Cranberries _____
   E. Ham _____
   F. Butter _____
   G. Yams _____
   H. Vegetable Oil _____

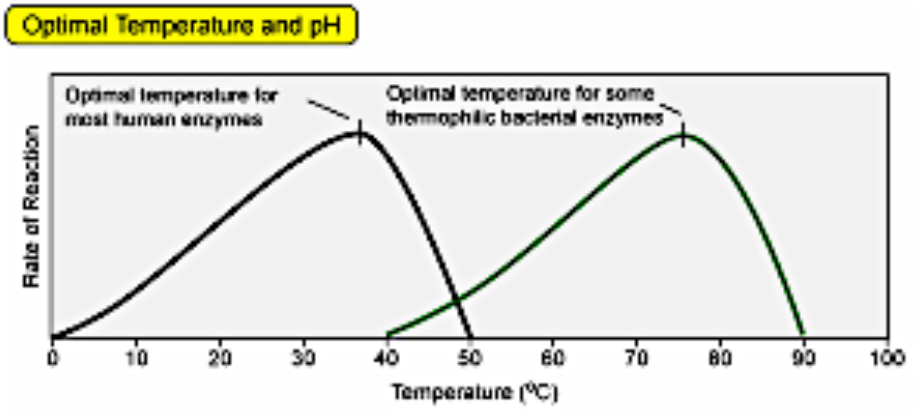
LT3: Explain how chemical reactions are affected by enzymes.

8. Explain the role of enzymes in biology. Use complete sentences and the terms - **chemical reaction**, **biological catalyst** & **activation energy** - in your explanation. (LT3_MTS)

9. Think of the lock and key analogy I used in class. Given the terms - **enzyme**, **substrate**, **active site,** and **product(s)** - be able to write a detailed explanation of the relationship between an enzymes active site and the substrate. If you would rather draw this relationship - sketch a detailed before and after drawing and label that various parts of the drawing with the terms listed above in **bold**. (LT3_ADV)

LT3: Explain how chemical reactions are affected by enzymes.

10. Be able to use these graphs to answer the questions below. (LT3_MAS)



*Notes: In order to understand the information displayed in this graph it is important to first read all of the information on it. Understand what the X and Y axis are and what scale they are using (if temp then degrees what...if time then what are the units - minutes, hours, seconds).

A. At what temperature do most human enzymes function best?_____

B. At what temperature do thermophilic bacterial enzymes function best? _____

C. At what temperature do human enzymes fully denature? _____

D. What is the temperature range where both human and thermophilic bacterial enzymes function? _____ to _____

E. Both human and thermophilic bacterial enzymes have a much wider 'bottom end' range of temperatures where they can function. Why is the 'top end' of their functionality so much shorter? Use complete sentences and vocabulary terms to explain your answer.