



## Biology I

### SB1bc Enzymes and Macromolecules Test Study Guide

#### SB1b Explain how enzymes function as catalysts

1. Describe enzymes.

**“Reusable” proteins that put together or break down substrates to form products**

2. Since enzymes are proteins they are made of .....what?

**Amino acids joined by peptide bonds**

3. The energy needed to start a chemical reaction is called?

**Activation Energy ( $E_A$ )**

4. How do enzymes increase the rate or speed of a chemical reaction?

**By lowering the Activation Energy ( $E_A$ )**

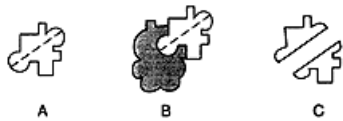
5. Where do the enzyme and substrate “fit” together?

**Active Site**

6. How can you change the function of enzymes?

**By adding acids or bases, changing the temperature, or increasing the enzyme concentration**

7. Draw a picture of (A) a substrate, (B) an ES complex, and (C) the products.



8. Give two examples of disaccharide substrates being catalyzed (broken down) in a chemical reaction with the help of an enzyme.

**Sucrose → glucose and fructose**

**Lactose → glucose and galactose**

9. What does the lock and key analogy describe?

**That a particular enzyme interacts with a specific type of substrate molecule**

10. Name some enzymes

**amylase, protease, sucrase, lactase, catalase**

**SB1c Identify the function of the four major macromolecules (i.e., carbohydrates, proteins, lipids, nucleic acids).**

1. Describe two primary functions of lipids.  
**Store energy and insulate**
2. What are some examples of lipids?  
**Wax, fats, oils, and cholesterol**
3. What are the monomers of nucleic acids?  
**Nucleotides**
4. What are lipids made of?  
**Fatty acids**
5. Which macromolecule stores genetic information?  
**Nucleic acids such as DNA**
6. What are some examples of carbohydrates?  
**Polysaccharides and glucose**
7. What are the subunits of fats?  
**Fatty acids**
8. Lipids may be tested using the brown paper bag test resulting in a translucent spotting effect. What foods would show a positive test?  
**Greasy foods like French fries or potato chips**
9. What is the primary **structural** component of the human body?  
**Protein**
10. Long chains of **amino acids** are linked by **peptide bonds** to form what macromolecule?  
**Protein**