Name_____

Hour_____

Date_____

Group #_____

Enzyme Kinesthetic Lab Demonstration Activity

Part I

Directions: Fill in the blanks using words from the word bank below.

active site	**key**	**protein**	**speed**
bonds	**lock**	**reactants (substrates)**	**substrate**
catalysts	**products**	**size/shape**	

Enzymes, also called biological (1)_____, are made out of (2)_____. The purpose of an enzyme is to (3)_____up a chemical reaction. Each enzyme has a(n) (4)_____ where a (5)_____ molecule binds. The (6)_____ of the substrate must match that of the enzyme's active site. The enzyme-substrate model is similar to a lock and key mechanism. The substrate acts as the (7)_____ and the enzyme acts as the (8)_____. In the enzyme-substrate complex, chemical bonds in the (9)_____ are broken and new chemical (10)_____ are formed. The results of the interaction between an enzyme and its substrate(s) are (11)_____, which are released by the enzyme.

Part II

Directions: Identify the following substances as either an enzyme, substrate, or product.

Lactase + Lactose → Glucose + Galactose

(12)_____ (13)_____ (14)_____ (15)_____

(16) Draw, label, color, and explain an enzyme/substrate/product(s) picture showing this chemical reaction.

Part III

Directions: Fill in the blank.

(17) What is the name of the substrate(s)/reactant(s) in the Apple Enzyme Lab activity?
_____

(18) What is the name of the browning enzyme in the Apple Enzyme Lab activity?
_____

(19) What is the name of the brown pigment product made when the apple's soft tissue is exposed to air?
_____

(20) Name three factors which affect an enzyme's activity or ability to work. #1_____, #2_____, and #3_____.

Part IV

Directions: In your group using your Enzyme Modeling Kit, demonstrate to the instructor how the enzymatic browning process occurs in apples and how inhibitors can slow/stop the browning process. Draw, label, color, and explain an enzyme/substrate/product picture for your demonstration below. Talk it, show it, do it!

Make sure you can demonstrate and explain the process using the following terms: **enzyme, catalyst, substrate/reactant, enzyme-substrate complex, product, protein, active site, lock, key, polyphenol oxidase, oxygen gas, melanin, lemon juice, hot water, hot sugar water, competitive inhibitor, pH, temperature, and other substances.**

☐ Instructor Signature/Initials: _____ Score:_____