

Quiz – Enzymes (BIO.2c)

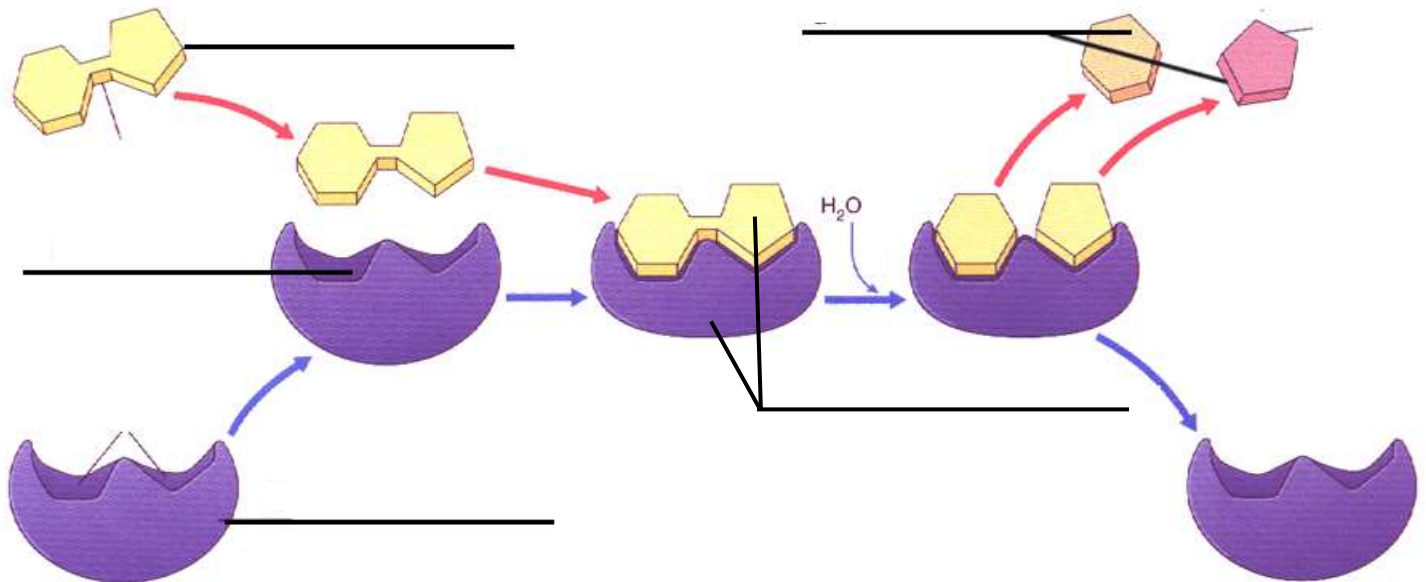
Fill in the blanks in the following paragraph using the word bank below. Not all terms will be used; no term will be used more than once. (6 pts; 1 pt each)

catalysts	enzymes	activation energy	decrease
metabolic reactions	increase	substrates	products

- Most life processes are a series of _____ influenced by environmental and genetic factors.
- The chemical reactions that occur inside cells are directly controlled by a large set of protein molecules called _____.
- Each enzyme has a definite three-dimensional shape that allows it to recognize and bind with its _____.
- In living cells, enzymes control the rate of metabolic reaction by acting as _____.
- Catalysts _____ the rate of chemical reactions because they decrease the _____ of the reaction.

Use the following terms to label the process shown below. Each term will be used only once. (5 pts; 1 pt each)

Active site	Enzyme	Enzyme-substrate complex	Product(s)	Substrate(s)
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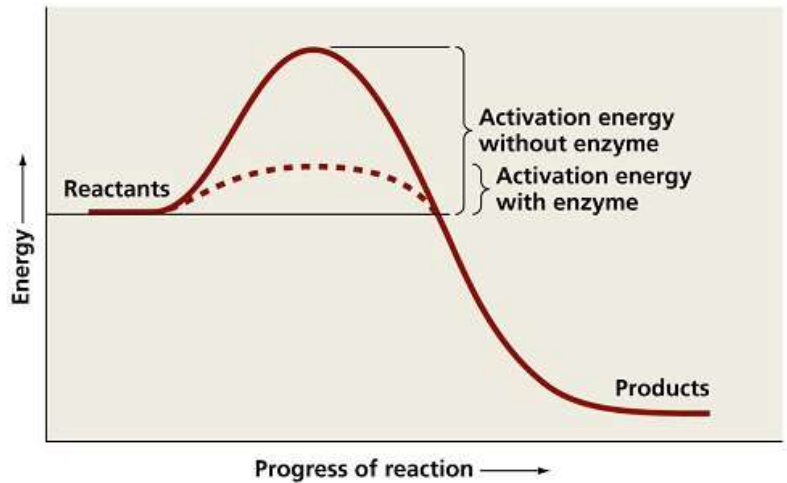
Extra Credit (1 pt): What type of metabolic reaction is shown above?

Answer the following questions by referring to the graph below. (3 pts; 1 pt each)

1. Describe activation energy of a chemical reaction. (1 pt)

2. Explain what happens to the activation energy of a chemical reaction when an enzyme is added. (1 pt)

3. Explain why the reaction rate slows down when the enzyme is removed. (1 pt)



Identify the optimum temperature and pH for each enzyme according to the graphs at right. (6 pts; 1 each)

Enzyme A

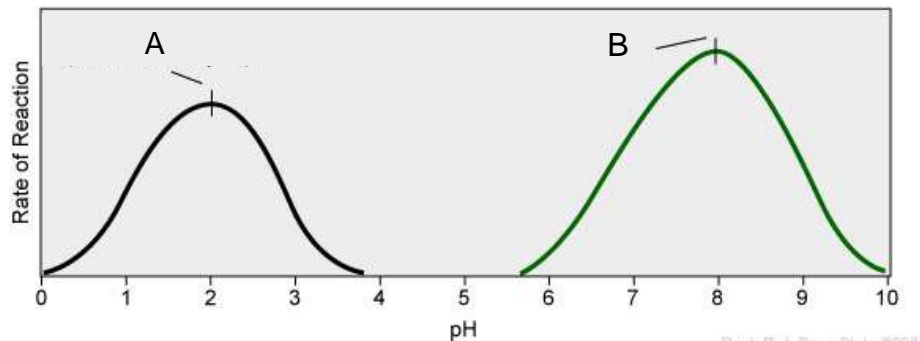
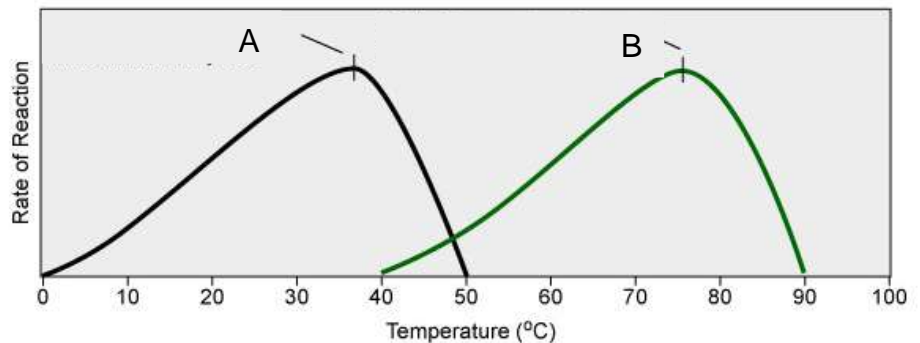
Temperature: _____

pH: _____

Enzyme B

Temperature: _____

pH: _____



Which enzyme (A or B) most likely works in the acidic human stomach? _____

Explain why the rate of reaction decreases above certain temperatures or at certain pH levels.

Name _____ Block _____ Date _____

Write the answer to each question in the space provided based on the data chart below. (5 pts; 1 pt each)

Substrate Concentration (mM)	Temperature (°C)	pH	Rate of oxygen production (mL/min)				
			Test 1	Test 2	Test 3	Test 4	Mean
0	20	6	0	0	0	0	0
1	20	6	5	7	4	8	6
2	20	6	10	12	13	9	11
3	20	6	20	24	23	21	22
4	20	6	60	66	68	65	

1. Identify the independent variable. _____
2. Identify the dependent variable. _____
3. Identify one constant for this experiment. _____
4. Identify the control for this experiment. _____
5. What is the mean rate of oxygen production (in mL/min) of catalase at with a substrate concentration of 4mM? _____