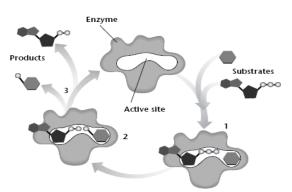
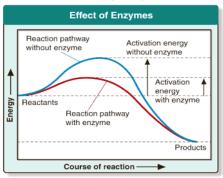
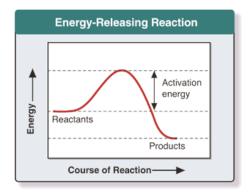
Enzymes and Chemical Reaction Rates

I. Review

- a. Enzymes are proteins that have a special function in the cells.
 - 1. Enzymes make chemical reactions go faster by lowering the activation energy of the reactions.
 - 2. The activation energy is the amount of energy it takes to get a reaction started.
 - By lowering the amount of energy needed to get reactions started, the reactions can start sooner and thus end sooner, making the reaction go faster.
- b. Enzymes work by binding the substrate at the active site, changing the substrate into the product, and then becoming available again for another reaction by releasing the product
 - 1. The substrate fits into the active site like a lock fitting a key; only one key can unlock one lock.





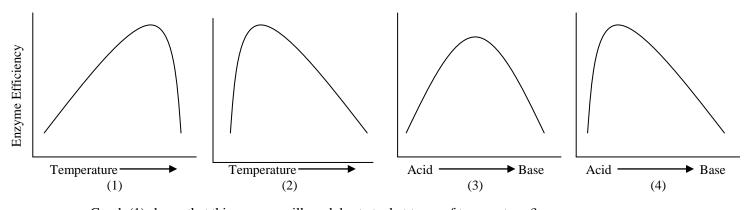


Period:

II. What Affects Enzymes

- a. There are two main factors that affect enzymes: temperature and pH
 - 1. Depending on how hot or cold it is, an enzyme might work better or worse.
 - 2. Most enzymes work best at a neutral pH (pH = 7), but some enzymes work well in acidic (below 7) or basic (above 7) conditions
- b. How well an enzyme works is called its efficiency or activity.
 - 1. The higher an enzyme's activity, the faster it works.

III. Basic Graphs of Enzymes



- a. Graph (1) shows that this enzyme will work best at what types of temperatures? _
- b. Graph (2) shows that this enzyme will work best at what types of temperatures?
- c. Graph (3) shows that this enzyme will work best at what type of pH?
- d. Graph (4) shows that this enzyme will work best at what type of pH?

Notes on Enzymes Part Deu	Notes	on	Enzymes	Part	Deux
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IV. Graph It!

	рН	Enzyme A Efficiency	Enzyme B Efficiency
	0	10	0
	1	30	0
Acidic	2	55	0
Aci	3	75	0
	4	90	0
	5	85	20
al	6 7	70	35
Neutral	7	60	45
Z	8	35	50
	9	20	65
	10	0	80
Basic	11	0	55
Ba	12	0	40
	13	0	30
	14	0	20

Period:

a. At what pH does enzyme A work best at?	
b. At what pH does enzyme B work best at?	
c. How high was the enzyme efficiency for enzyme A at a pH of	8?
d. Which enzyme works best at a basic pH?	
e. Which enzyme is the most efficient at any nH?	

Temperature	Enzyme A Efficiency	Enzyme B Efficiency	Enzyme C Efficiency	
0	10	10	0	
10	50	20	0	
20	75	30	0	
30	100	40	0	
40	90	50	15	
50	60	60	60	
60	30	50	90	
70	0	40	80	
80	0	30	50	
90	0	20	30	
100	0	10	20	

a.	Which of	enzyme	works	best at l	lower	temperatures?	'
1_	1171a: ala		*******	Last of	1004 400		

- b. Which enzyme works best at hot temperatures?
- c. Which enzyme is most efficient? _____ d. Which enzyme is least efficient?

е.	willen enzyme work	s at an ten	iiperatures?
C	A	Λ 1	

- f. At a temperature of 60, what is enzyme A's efficiency?
- g. At a temperature of 100, what is enzyme C's efficiency?
- h. At a temperature of 50, what is enzyme B's efficiency?
- i. At a temperature of 90, what is the most efficient enzyme?
- j. How many enzymes work at a temperature of 70 degrees? _____
- k. How many enzymes work at a temperature of 20 degrees? _____