

Basic Statistics and Enzymes Possible FRQ's

You will see one of these FRQ questions on your next AP Biology exam. The rest you may see on the Short Answer section.

“If you fail to plan...plan to fail.”

- (a) **State** the First Law of Thermodynamics. [2]

(b) **Relate and explain** the energy relationship between the biological processes of Photosynthesis & aerobic cellular respiration to the 1st Law of Thermodynamics. [12]

(c) **Identify, describe** and **explain** which of the two reactions from (b) is exergonic and which is endergonic reaction? [6]
- Most enzymes are globular and therefore tertiary in structure.

(a) **Describe** the tertiary structure of proteins being sure to describe the interactions between three of the side chains that contribute to its overall shape. [7]

(b) **Explain** how the tertiary structure of an enzyme allows it to perform its function. [5]

(c) **Compare** and **contrast** the effects of competitive and noncompetitive inhibition on the rate enzyme activity by explaining how each affects enzyme structure and function. [8]
- (a) What are enzymes and how EXACTLY do they affect chemical reactions. **Draw** and **label** an “idealized” graph to *help* you **explain** the difference between a catalyzed chemical reaction and a noncatalyzed chemical reaction in terms of the activation energy required. [6]

(b) **Draw** an “idealized” graph for each of the following to *assist* you in **explaining** the effect each on enzyme activity.

 - temperature [4]
 - pH [4]
 - [substrate] [4]
- Graph, Calculate** and **Compare** the rates of enzyme catalyzed reactions.
- Basic Statistics Questions and Computations.

 - mean – median – mode – standard deviation – standard error – Chi-square
(standard error bars)