BIO II Honors Enzyme Lab Questions

PreLab Questions

1. Differentiate between anabolic (endergonic) and catabolic (exergonic) reactions in terms of both energy and products.
2. What are biological catalysts and are they necessary for biochemical reactions to occur?
3. How do enzymes speed up chemical reactions?
4. Describe the relationship between an enzyme, its substrate, its active site, and the induced fit model.
5. What environmental factors affect enzyme performance? How do each affect the performance of an enzyme?
6. Differentiate between cofactors and coenzymes giving examples of each.
7. Describe the two ways that enzymes can be naturally inhibited in metabolic pathways.

Relate this inhibition to toxins and drugs.

1. Allosteric binding sites are locations on an enzyme that are situated away from the active site. How might chemical bonding at an allosteric site affect the performance of an enzyme?
2. Use what knowledge you already have to relate mutations in DNA to enzyme performance.

PostLab Questions

1. Relate the amount of KMnO4 used in the titration of the reaction chamber to the amount of H2O2 that was broken down (hint: you started with 10 mL of H2O2. Some of it was broken down by the enzymes. The rest was reacted with the KMnO4. If you used 9 mL of KMnO4 in titration then how much H2O2 was broken down by the enzyme?)
2. Based on what you learned answering the previous question, calculate the total amount of H2O2 broken down by catalase for each time interval and record this in a chart neatly.
3. Graph the data obtained from question number 2 (total H2O2 broken down vs time)
4. Now calculate the amount of H2O2 broken down per second and record this in your chart.
5. Graph the data obtained from question number 4 (H2O2 broken down per second vs time)
6. What happens to the total amount of H2O2 broken down over increasing periods of time (refer to first graph)?
7. What happens to the **rate** of H2O2 broken down over time (refer to second graph)?