Year 12 Science: Enzymes and the factors that affect them

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. An enzyme reaction gives off 30 cm³ of oxygen in 2 minutes. What is the average rate?

2. An enzyme is kept at 5 °C for an hour, then warmed to 37 °C. What happens to its activity, and why?

3. The rate has levelled off at a high substrate concentration. What happens to the rate if you double the substrate concentration again?

4. Which kind of inhibitor can be overcome by adding more substrate?

5. In the class's catalase results, how many times faster was the rate at 30 °C than at 10 °C?

Exam-style question: kiwifruit in jelly

Mere makes two jellies with gelatine, which is a protein. She stirs fresh kiwifruit into the first and canned kiwifruit into the second. Canning heats the fruit to a high temperature. The jelly with canned fruit sets, but the jelly with fresh fruit stays runny.

6. Describe what an enzyme is.

7. Explain why the jelly with fresh kiwifruit does not set, using the idea of the active site.

8. Explain why the jelly with canned kiwifruit does set.

9. Mere keeps fresh kiwifruit in the fridge at 4 °C for a week, then puts it in a jelly. Discuss whether this jelly will set, comparing the effects of low and high temperature on the enzyme.

Fix the mistake

10. Correct this statement: "At low temperatures the enzyme is denatured, so it stops working."

11. Correct this statement: "The enzyme dies at high temperatures."

12. Correct this statement: "The enzyme is used up in the reaction, so the rate slows down."

13. Correct this statement: "The active site and the substrate are the same shape."