Week 5 Enzyme Controlled Reactions Lab

Name:

Amount of Substrate	pH 3	pH 5	pH 7	pH 9	pH 11
0.5 g	23	33	71	65	24
1 g	29	51	145	91	49
2 g	52	102	313	174	103
3 g	86	139	450	213	124
4 g	86	139	450	213	124

Journal Questions

1. Describe the relationship between substrate concentration and the initial reaction rate of an enzyme-catalyzed reaction. Is this a linear relationship? What happens to the initial reaction rate as substrate concentration increases? As the amount of substrate increases the reaction increases however, it is not linear as it is not an even change.

2. What is the maximum initial reaction rate for this enzyme at pH 7?

   450

3. Explain why the maximum initial reaction rate cannot be reached at low substrate concentrations. At a low substrate not all of the active sites on the molecules are filled with the substrate.

4. What does your data indicate about the optimum pH level for this enzyme-catalyzed reaction?

5. Enzymes function most efficiently at the temperature of a typical cell, which is 37 degrees Celsius. Increases or decreases in temperature can significantly lower the reaction rate. What does this suggest about the importance of temperature-regulating mechanisms in organisms? Explain. This suggests that the