Name _____

Chem 352 - Spring 2011
Quiz 2

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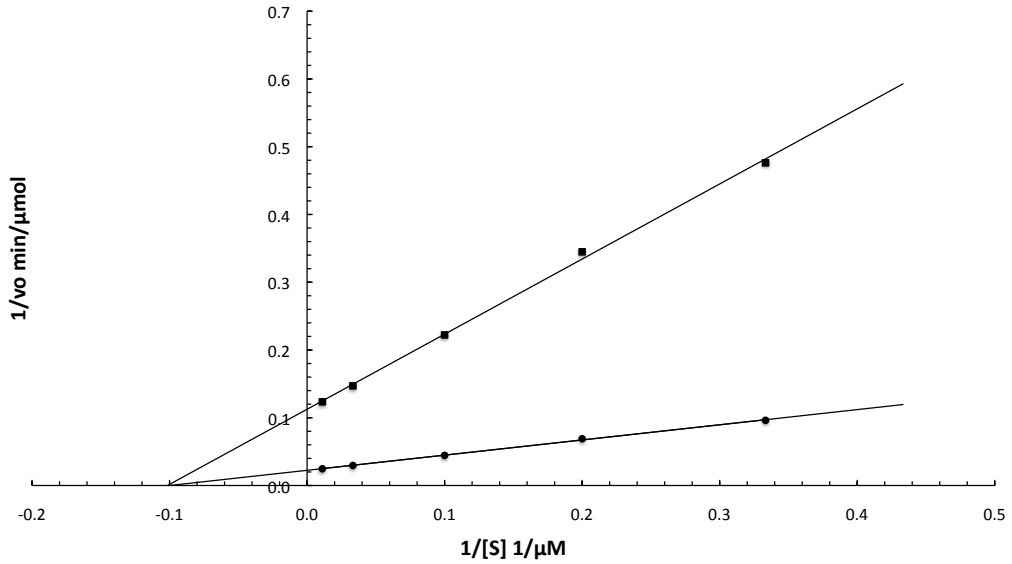
1. In class we discussed four hierarchical levels of structure in proteins.
   a. Describe the role that protein secondary structure plays in this hierarchy.

   b. Describe the link between a protein's primary structure, which is determined by the gene that encodes for it, and its tertiary structure. Include in your description a discussion of the contributions of Christian Anfinsen along with what it means for two proteins to be *homologous*.

   c. The myoglobin molecule is homologous with the four subunits of the hemoglobin molecule. In comparing the functions of these two proteins, discuss how the presence of quaternary structure in hemoglobin makes it better suited to its function.

2. Shown below are the Lineweaver-Burk plots for the kinetics of an enzyme catalyzed reaction in the presence and absence of a 100 μM concentration of an inhibitor. The experiments were carried out in the presences of 1.0 μmol of enzyme.



a. In the absence of inhibitor, how many reactions does each enzyme molecule catalyze per second? Show your calculations

b. In absence of inhibitor, is this enzyme catalyzed reaction diffusion rate limited? That is, has this enzyme attained catalytic perfection?

c. Where on the enzyme molecule, relative to its active site, does the inhibitor most likely bind? Provide evidence to support your claim.