

COURSE CODE: BCH 302

TIME ALLOWED:

COURSE TITLE: ENZYMOLOGY

DATE: 9TH AUGUST, 2010

INSTRUCTION: ANSWER ALL QUESTIONS IN SECTION A AND ONLY 3 QUESTIONS FROM SECTION B

SECTION A

Complete the following questions with appropriate terms

1. K_m is the kinetic parameter that requires knowing the absolute concentration of the enzyme.
2. Noncompetitive inhibitors prevent an enzyme from functioning by binding to other site other than the Active site.
3. Any molecule which attaches to an enzyme's regulatory site is called Allosteric enzyme.
4. The molecule to which an enzyme joins is called its Substrate.
5. When an enzyme has been denatured, it has been lost its function.
6. The part of the enzyme molecule into which the substrate fits is called the Active site.
7. Coenzymes are best defined as acts as transient carrier of specific functional groups. Organic molecule that are additional chemical component.
8. Lineweaver Burk plot is used to determine inhibition constant.
9. _____ is an example of a non-sequential mechanism in a bireactant system.
10. Name the enzyme catalyzing the reaction below:

L-Alanine



D-Alanine

Alanine racemase (5.1.1.1)

both coenzyme & cofactor = prosthetic group.

Please Turn Over

V_{max} = turn over no.

QTHIL

SECTION B (ANSWER 3 QUESTIONS ONLY)

1. (a) Define K_m of an enzyme.

(b) State the Michaelis-Menten equation

(c) The following results were obtained for an enzyme-catalysed reaction:

[S] (mMol $^{-1}$)	Initial Velocity (mMol $L^{-1} min^{-1}$)
5.00	147
6.67	182
10.00	233
20.00	323
40.00	400

$$\frac{1}{v_0} = \frac{K_m}{V_{max}} \times \frac{1}{[S]} + \frac{1}{V_{max}}$$

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(i) Does the enzyme obey Michaelis-Menten kinetics?

(ii) Calculate the K_m and V_{max} of the enzyme.

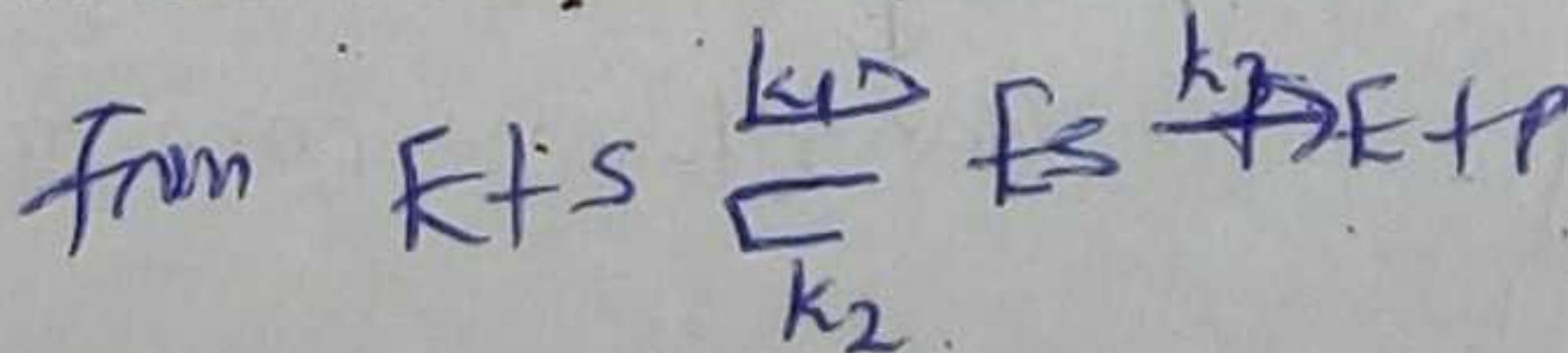
2. (a) Describe how you can identify functional groups that are essential for catalysis in a named enzyme.

(b) Describe briefly the mechanism of action of chymotrypsin in the body.

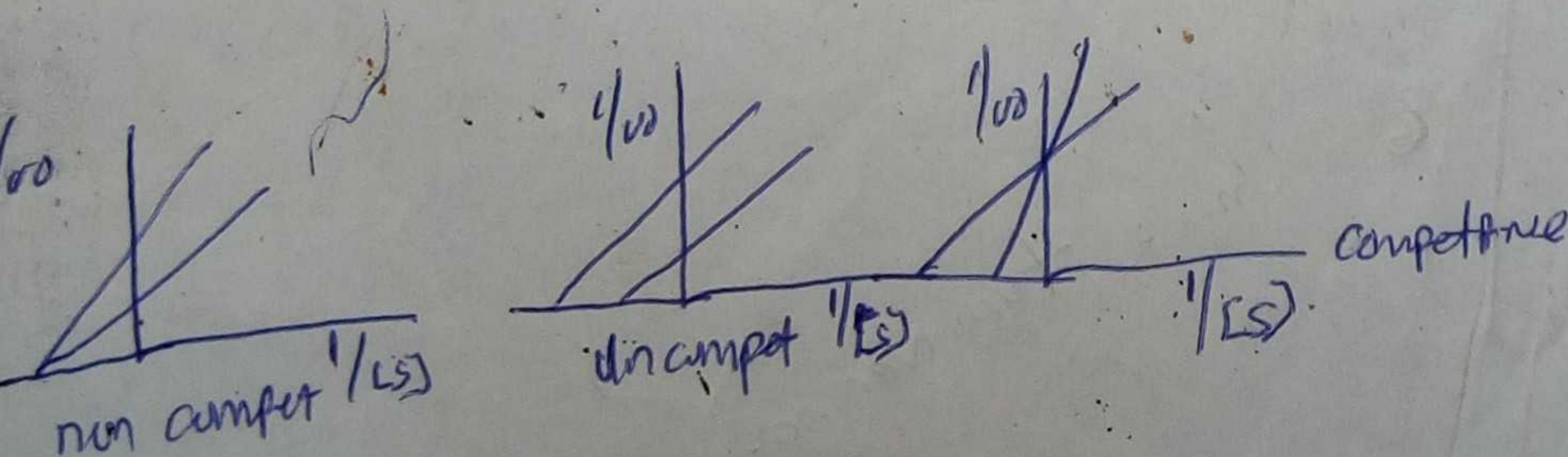
3. (a) With the aid of the appropriate graphs and the kinetic patterns describe the common types of reversible inhibition.

(b) What is an enzyme assay?

4. (a) Derive the Lineweaver-Burk's equation from the steady state approach of the unireactant system.



(b) Explain how you will measure the reaction rate of an enzyme catalysed reactions.



$$-1/[S] + 1/V_{max}$$