



CRAWFORD UNIVERSITY

FAITH CITY, IGBESA, OGUN STATE

2012/2013 HARMATTAN SEMESTER EXAMINATIONS

COLLEGE: NATURAL AND APPLIED SCIENCES

DEPARTMENT: BIOLOGICAL SCIENCES

PROGRAMME: B.Sc BIOCHEMISTRY

COURSE CODE: BCH 305

COURSE TITLE: ENZYMOLOGY.

UNIT:3

STATUS: COMPULSORY

INSTRUCTION: Answer any FIVE questions

TIME ALLOWED: 3 HOURS

- 1 (a) Enumerate the characteristics of enzymes.
(b) Describe the structural levels of organization of enzymes.
- 2 (a) Explain the major classes of enzymes and state specific biochemical equation in each case.
(b) Discuss briefly the factors that affect enzyme activity.
- 3 (a) Explain the features of the "active site" of enzymes.
(b) Differentiate between the 'lock and key' and 'induced-fit hypotheses of enzyme substrate interaction.

- 4 Reaction mixtures containing equal concentration of an enzyme are made up to the substrate concentrations indicated in the table below; and the initial rates of reaction are measured. The experiment is then repeated with an enzyme inhibitor at a concentration of 2.2×10^{-4} M in each reaction mixture.

S/N	Substrate concentration (moles/liter)	Inhibitor absent V: (Umoles/min)	Inhibitor present V: (Umoles/min)
1	1.0×10^{-4}	28	18
2	1.5×10^{-4}	36	24
3	2.0×10^{-4}	43	30
4	5.0×10^{-4}	63	51
5	7.5×10^{-4}	74	63

Using the Lineweaver-Burk plots of the data above, graphically determine:

- (i) K_m for the substrate and state its significance.
- (ii) K_i for the inhibitor.
- (iii) V_{max} in the absence and presence of inhibitor.
- (iv) Is this a competitive or non-competitive inhibition.

- 5 (a) Discuss briefly the major industrial uses of enzymes

- (b) Give four (4) examples of enzymes which are of clinical diagnostic importance, and state their significance.
- 6 (a) Write short notes on the following:
- (i) Coenzymes.
 - (ii) Enzyme assay techniques.
 - (iii) Turnover number.
 - (iv) Isoenzymes.
- 7 Explain clearly what you understand by the following:
- (a) Metal-activated enzymes.
 - (b) Oligomeric enzymes.
 - (c) Enzyme catalysis.

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