FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI
SCHOOL OF PHYSICAL SCIENCES
DEPARTMENT OF SCIENCE LABORATORY TECHNOLOGY
HARMATTAN SEMESTER EXAMINATION 2013/2014 SESSION
STC 301: ENZYMOLOGY
TIME ALLOWED: 3 HOURS
INSTRUCTION: ANSWER FIVE (5) QUESTIONS, CHOOSING AT LEAST ONE QUESTION FROM EACH SECTION

Section A

1. The earliest digestive enzymes discovered were ....., ... and .....

   In enzyme Commission (EC) for classification of enzymes, EC1 is for the group of enzymes ..... and catalyse ..... reactions.

   EC2 is for the group of enzymes ..... and catalyse ..... reactions.

   EC3 is for the groups of enzymes ..... and catalyse ..... reactions.

   EC4 is for the groups of enzymes ..... and catalyse ..... reactions.

   EC5 is for the groups of enzymes .....

2. EC5 catalyse ..... reactions.

   EC6 is for the group of enzymes ..... and they catalyse ..... reactions.

   The reactions catalysed by the following enzymes are:

   Decarboxylase catalyse ....

   Phosphatase catalyse .....

   Peptidase catalyse .....

   Esterase catalyse .....

   A coenzyme is .....

   A prosthetic group is ....

A holoenzyme is .....

Apoenzyme is .....

Inorganic cofactor is .....

Section B

3. (i) Mention the necessary conditions for an enzyme assay. (ii) What are the various forms enzyme activity could be expressed? (iii) Describe how you can measure the rate of enzyme reaction in a single experimental design. (iv) Explain why enzyme specific activity increases with percentage purity.

4. (a) Compare and contrast continuous and discontinuous enzyme assay. (b) Describe the basic chemical reactions involved in oxygen electrode. (c) What types of enzyme reaction can oxygen electrode be used to assay? (d) Mention two advantages of oxygen electrode as a method of enzyme assay.

Section C

5. Explain the following terms (a) (i) Enzyme activity (ii) specific enzyme activity (iii) fold (purification) (iv) yield after enzyme purification. (b) Outline two ways you use to determine criteria for enzyme purity.

6. Describe briefly the following types of enzyme systems: (a) isoenzyme (b) allosteric enzyme (c) multienzyme complex.

Section D

7. The following experimental data were collected during a study of the catalytic activity of an intestinal peptidase with the substrate glycylglycine:

[S](mM)	Product formed (μmol/min)
1.5	0.21
2.0	0.24
3.0	0.28
4.0	0.33
8.0	0.40
16.0	0.45

Use the graphical analysis to determine the K_m and V_{max} for this enzyme preparation and substrate.