OLABISI ONABANJO UNIVERSITY
CENTRE FOR SANDWICH PROGRAMMES
DEPARTMENT OF BIOCHEMISTRY
REMO CAMPUS, IKENNE.

2011/2012 EXAMINATION

DATE: 25TH AUGUST 2012

OURSE CODE: BCH 401 COURSE TITLE: ADVANCED ENZYMOLOGY TIME ALLOWED: 2 HOURS

CTION A: ANSWER ANY TWO (2) QUESTIONS

1. (a) Define the following terms:
   (i) Transient kinetics (ii) Steady state kinetics (iii) K_m (iv) K_{cat}

   (b) Differentiate between the following:
   (i) Continuous and stop flow techniques (ii) Acid – base catalysis and covalent catalysis

2. (a) What are regulatory enzymes?
   (b) Write short notes on either of the following, giving specific example(s) in each case.
   (i) Allosteric enzymes (ii) Covalently modulated enzyme
3. (a) Write extensively on the MWC model of allosterism.
   (b) Differentiate between concerted and sequential allosterism.

CTION B: ANSWER ALL QUESTIONS. (SHOW ALL WORKINGS)

For an enzyme X, under the assay condition, the enzyme activity is defined by the following

A solution of the enzyme sample was **diluted 10 fold**, the enzyme assay was performed in **duplicate** and the absorbance (OD_{650}) values was obtained as follows; 0.741, 0.736.

(a) Calculate the total enzyme activity of the protein sample, give your answer in **μmol(product)/ml/min.**

(b) Complete the Purification table below; calculate both the **specific activity** and **% yield** for the two purification steps.

fraction	Volume(ml)	Total protein (mg)	Total activity (U)	Specific activity (U/mg)	Yield (%)
Crude	200	16,000	34,600	2.16	100
Purification Step I	35	4,900	12,915		
Purification step II	84	1,008	12,600		

2. (a) Regulation of the lac operon is a classical example of negative control of enzyme regulation. Explain

(b) Define some of the factors to control in enzyme assay procedures.