Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
End Semester Examination:
Faculty: Science and Technology

Program: B.Sc.Gen03 **Semester: V** **SET: A**
Program (Specific): Microbiology **Course Type: DSC**
Class: T.Y.B.Sc. **Max.Marks: 35**
Name of the Course: Enzymology.
Course Code: 24-MB-353 **Time: 2Hr**
Paper: III

Instructions to the candidate:

1) ***There are 4 sections in the question paper. Write each section on separate page.***
2) ***All Sections are compulsory.***
3) ***Figures to the right indicate full marks.***
4) ***Draw a well labelled diagram wherever necessary.***

SECTION: A

Q1) Answer the following 5 Marks

I.Which vitamin acts as a coenzyme in the form of Thiamine Pyrophosphate (TPP)

a) Vitamin B2 b) Vitamin B6
c) Vitamin B1 d) Vitamin B12

II. For enzyme assays, substrate concentration should be_ _ _ _ _ _ _ _ _ _ _ _ enzyme concentration.

a) equal to b) very very high as compared to
c) very very low as compared to d) almost same as

III. Which method is commonly used for enzyme assays that involves measuring changes in absorbance?

a) Spectrophotometric method b) Radioisotope assay
c) Chromatography d) Gel Electrophoresis

IV. In enzyme assays, the specific activity of an enzyme is defined as:

a) Total enzyme activity per unit volume b) Enzyme activity per mg of protein
c) Total substrate used per unit time d) Enzyme activity per unit of substrate

V Which purification method exploits the differences in solubility of proteins?

a) Affinity Chromatography b) Gel Filtration Chromatography
c) Salting Out d) Ion Exchange Chromatography

Q2) Answer the following (Attempt any 4/6) 4 Marks

I. Name the coenzyme form of Thiamine .
II. Scientist need to determine active site structure of enzyme but substrate was immediately dissociating from the enzyme. Suggest suitable technique to stabilize Enzyme substrate complex.
III. Enzymatic reactions leading to release of gaseous products can be easily monitored through Radioisotope assay, find out the reason behind it
IV. Mention the role of Acrylamide in protein electrophoresis.
V. State Principle of Ion exchange chromatography. Suggest suitable groups to be attached to matrix in anion exchanger chromatography.
VI. Enlist the names of enzymes present in multienzyme complex Pyruvate dehydrogenase.

SECTION: B

Q3) Answer the following (Attempt any 4/6) 8 Marks

I. Relate immobilization of enzymes with optimum use of enzyme.
II. Bacterial cells need to be lysed for obtaining intracellular enzymes, select one enzyme from cellulase , chitinase and lysozyme . Justify your selection.
III. Explain significance of purification chart.
IV. Mention difference between steady state approach and equilibrium approach for determination of kinetic parameters of enzymes.
V. Enlist enzymes present in nucleus of the cell.
VI. Describe Isoenzymes.

SECTION: C

Q4) Answer the following (Attempt any 4/6) 8 Marks

I. Explain significance of Km
II. Enlist two enzymes activated by zymogen activation process.
III. Two enzymes differing in their hydrophilic and hydrophobic properties need to be separated. Comment on the methos which can be used.
IV. Explain enzyme purification method based on specific binding property.
V. Describe x ray crystallographic method to determine structure of protein.
VI. Explain role of vitamin B1 in metabolism

SECTION: D

Q5) Attempt any two of the following 10 Marks

I) Discuss the mechanism of regulation of Allosteric enzymes.
II) Derive Michelis Menten Equation and draw its plot.
III)Describe method to purify proteins on the basis of molecular size without using any electrical power supply.
IV)Illustrate use of Spectrophotometric method for enzyme assay.