Seat No:_____ Enrollment No:_____

PARUL UNIVERSITY

FACULTY OF APPLIED SCIENCE

M.Sc. Summer 2017-18 Examination

Semester: 2 **Date: 14/05/2018**
Subject Code: 11203152 **Time: 10:30AM to 01:00 PM**
Subject Name: Enzyme Technology **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A) Brief note (4x2) (Each of 04 marks) **(08)**

(a) Describe any four remarkable properties of Enzyme.

(b) Discuss the Lineweaver-Burk (double-reciprocal) plot to determine the kinetic constants for an enzyme.

Q.1. B) Answer the following questions (Any two)

(a) Short answer questions (2x2) (Each of 02 marks) **(04)**

1. Explain feedback regulation.
2. What mathematical expression describes the rate of formation of product when the entire enzyme is substrate bound?

(b) Write a short note on Koshland's Model. **(04)**

(c) Describe the types of reversible inhibition in enzymes. **(04)**

Q.2. A) Answer the following questions.

(a) Brief note (Each of 02 marks) **(04)**

1. Isoenzyme and Synzyme
2. Holoenzyme and Coenzyme

(b) Describe various factors affecting the Enzyme activity. **(04)**

Q.2. B) Answer the following questions (Any two)

(a) Multiple choice questions. (Each of 01 marks) **(03)**

1. Zymogens are

a. Inactive form b. Active form
c. Solvent of enzyme d. Enzyme inhibitor

2. Specific temperature at which enzyme works at maximum rate is classified as

a. Solute temperature b. Natural
c. Optimum d. Solvent

3. The term Apoenzyme is applicable to

a. Simple enzyme b. Protein part of enzyme
c. Organic cofactor d. Inorganic cofactor

(b) What is Riboenzyme? Briefly explain. **(03)**

(c) What is [S] when the velocity of the reaction is 1/2 Vmax? Show this mathematically. **(03)**

Q.3. A) Describe the various types of catalytic mechanisms of enzymes with suitable examples. **(08)**

Q.3. B) Answer the following questions (Any two)

(a) Short answer questions (Each of 02 marks) **(04)**

1. List names of coenzyme derived from Vitamin B1 and Vitamin B6.
2. Give two examples of coenzymes derived from Riboflavin.

(b) Differentiate (generally) between ordered sequential bisubstrate reactions and random sequential bisubstrate reactions. **(04)**

(c) Describe the ping-pong mechanism of enzyme reactions with example. **(04)**

Q.4. A) Answer the following questions.

(a) Fill in the blanks. (Each of 02 marks) **(04)**

1. In the presence of a competitive inhibitor, the Michaelis-Menten equation becomes _____.

2. In the presence of a uncompetitive inhibitor, the Michaelis-Menten equation becomes_____.

(b) Describe the mechanism of action and regulation of Pyruvate dehydrogenase. **(04)**

Q.4. B) Answer the following questions (Any two)

(a) Multiple choice questions. (Each of 01 marks) **(03)**

1. When the velocity of enzyme activity is plotted against substrate concentration, which of the following is obtained?

a. Hyperbolic curve b. Parabola

c. Straight line with positive slope d. Straight line with negative slope

2. Choose the correct option for uncompetitive inhibition in enzymatic reactions?

a. Vmax changes b. Km changes

c. Vmax and Km both change d. Vmax and Km do not change

3. The molecule which acts directly on an enzyme to lower its catalytic rate is

a. Repressor b. Modulator

c. Inhibitor d. Regulator

(b) Differentiate between Metal activated and Metallo enzyme. **(03)**

(c) Write a short note on "catalytic triad" of serine proteases. **(03)**