Seat No.:_____ **Enrollment No.:**_____

PARUL UNIVERSITY
FACULTY OF AGRICULTURE
B. Tech. Dairy Technology - Winter 2019-20 Examination

Semester: 1st **Date:07/12/2019**
Subject Code: 20104109 **Time: 10:30am to 12:30pm**
Subject Name: Biochemistry **Total Marks: 50**

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) Fill in the blanks **(05)**

i) If one side of DNA molecule contains the nucleotides sequence, TCAGGC, the complementary sequence on the other side would be _____.

ii) _____ is the inorganic non protein part of the holoenzyme.

iii) The substrate concentration that gives ½ Vmax is known as _____ constant.

iv) In case of competitive inhibition, the value of _____ increases.

v) The full form of DNA is _____.

vi) _____ enzyme catalyses conversion of Glu-6-Phosphate to Fruc-6-Phosphate.

vii) Fatty acids are esterified into mono-, di-, or triglycerides by attaching to _____.

viii) The molecule which acts directly on an enzyme to lower its catalytic rate is called as _____.

ix) Pyrimidine bases have only one ring in their structure, but purines have _____ rings.

x) Building blocks of nucleic acids are _____ .

B) Multiple choice questions **(10)**

i) Glycolysis takes place in _____ part of the cell.
a) Cytosol b) Mitochondria
c) Golgi apparatus d) All of the above

ii) The Kreb's cycle is also called as _____ .
a) TCA cycle b) Citric acid cycle
c) Both a & b d) None of the above

iii) The minimum amount of energy required for the reaction to proceed in the forward direction is called as _____.
a) Gibbs free energy b) Activation energy
c) Kinetic energy d) Potential energy

iv) When the substrate itself serves as an effector, the effect is called _____.
a) Homotropic b) Heterotropic
c) Monotropic d) Polytropic

v) Net ATPs production on oxidation of one mole of glucose into CO_2 and H_2O is _____.
a) 2 b) 8
c) 24 d) 38

vi) Enzymes are also called as _____.
a) Physical catalyst b) Chemical catalyst
c) Biological catalyst d) Microbiological catalyst

vii) The urea cycle converts excess _____into urea in the mitochondria of liver cells.
a) alcohol b) amino acids
c) aldehydes d) ammonia

viii) _____ acts as a coenzyme in transamination reactions.
a) Vitamin B_1 b) Vitamin B_2
c) Vitamin B_6 d) Vitamin B_{12}

ix) Ribozymes catalyses the reactions for _____ in body.
a) protein synthesis b) lipid synthesis
c) carbohydrate synthesis d) vitamin synthesis

x) Synthesis of Glycogen from Glucose is called as _____ .
a) glycolysis b) glycogenesis
c) glycogenolysis d) gluconeogenesis

xi) _____ is not the component of RNA.
a) Adenine b) Guanine
c) Cytosine d) Thymine

xii) _____ are enzymes that differ in amino acid sequence but catalyze the same chemical reaction.
a) Ribozyme b) Isozyme
c) Zymogen d) Co-enzyme

xiii) The basic structural material of all enzymes are _____ .
a) amino acids b) fatty acids
c) mono-saccharides d) none of the above

xiv) The examples of sulphur containing amino acids is/are _____ .
a) Cysteine b) Cystine
c) Methionine d) All of the above

xv) The lock and key mechanism of enzyme action was first postulated in 1894 by _____.
a) Watson and Crick b) Rosalind Franklin
c) Emil Fischer d) John Fenn

xvi) _____is not required in the synthesis of fatty acids.
a) Acetyl-CoA b) Biotin
c) NADH d) Malonyl-CoA

xvii) Glucose metabolism via the pentose phosphate pathway fates the C-1 carbon to become _____ .
a) Glycogen b) Carbon dioxide
c) Pyruvate d) None of the above

xviii) The rate determining step of Michaelis-Menten kinetics is _____.
a) breakdown of ES complex b) formation of product
c) formation of ES complex d) none of the above

xix) _____ ratio is constant for DNA.

a) A + T / G + C
b) A + G / T + C
c) A + C / U + G
d) A + U / G + C

xx) _____cannot serve as the starting material for the synthesis of glucose via gluconeogenesis.

a) Acetate
b) Glycerol
c) Propionate
d) α-ketoglutarate

Q.2

A) Define the following (Any five) **(05)**

(1) Co-enzyme
(2) Nucleic acid
(3) Glycolysis
(4) Michaelis constant
(5) Zymogens
(6) Lipids
(7) Transition state

B) Answer the following (Any five) **(05)**

(1) What do you understand by 'immobilization of enzyme'?
(2) Enlist any two essential amino acids.
(3) Which pentose sugar is present in RNA?
(4) What is gluconeogenesis?
(5) Give any two functions of carbohydrates.
(6) Enlist any two essential fatty acids.
(7) What is the difference between co-enzymes and co-factors?

Q.3 Write short notes (Any five) **(10)**

(1) Enzyme inhibition.
(2) Pentose phosphate pathway.
(3) m-RNA.
(4) Fatty acid oxidation.
(5) Electron transport chain reaction.
(6) Mechanism of enzyme action.

Q.4 Long Questions (Any three) **(15)**

(1) Explain the process of 'Glycolysis' in detail.
(2) Explain the double helical structure of DNA with proper structure.
(3) Write the classification of enzymes with proper examples and explain the factors affecting enzyme activity.
(4) Describe in detail about the TCA cycle.