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BINA CHOWDHURY CENTRAL LIBRARY
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Roll No. of candidate

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2019

B.Pharm. 2nd Semester End-Term Examination

BIOCHEMISTRY

(New Regulation – w.e.f. 2017-18)

Full Marks – 75

Time – Three hours

The figures in the margin indicate full marks
for the questions.

1. Answer the following questions :

Choose the correct answer : (20 × 1 = 20)

- (i) Which of the following statements about enzymes or their function is true?
- (a) Enzymes do not alter the overall change in free energy for a reaction.
 - (b) Enzymes are proteins whose three-dimensional form is key to their function.
 - (c) Enzymes speed up reactions by lowering activation energy.
 - (d) All of the above

[Turn over

- (ii) Blocking of enzyme action by blocking its active sites is
- (a) allosteric inhibition
 - (b) feedback inhibition
 - (c) Competitive inhibition
 - (d) non-competitive inhibition
- (iii) What important reducing agent is an important product of the pentose phosphate pathway?
- (a) NAD^+
 - (b) NADP^+
 - (c) NADH
 - (d) NADPH
- (iv) Insulin increases the activities of all of the following enzymes, except
- (a) Glucokinase
 - (b) Pyruvate carboxylase
 - (c) Glycogen synthase
 - (d) Acetyl-CoA carboxylase
- (v) Which type of metabolic fuel is utilized for generating glucose under conditions of severe starvation?
- (a) Glycogen
 - (b) Fats
 - (c) Starch
 - (d) Amino acid

(vi) In lactose linkage is:

(a) β 1-4 linkage

(b) β 1-2 linkage

(c) α 1-4 linkage

(d) α 1-2 linkage.

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(vii) In the TCA cycle, at which of the following enzyme-catalyzed steps, incorporation of elements of water into an intermediate of the cycle takes place

(a) Citrate synthase

(b) Aconitase

(c) Maleate dehydrogenase

(d) Succinyl Co-A synthase

(viii) Which of the following is known as stop codon?

(a) AUG

(b) UGA

(c) AAA

(d) AGA

(ix) In un-saturated fatty acids, the symbol (Δ) is used to express:

(a) Position of single bond

(b) Position of double bond

(c) Position of triple bond

(d) None of these

- (x) SGPT is also known as
- (a) AST
 - (b) ALT
 - (c) CO-Q
 - (d) CPK
- (xi) In which organisms does glycolysis occur?
- (a) Aerobic organisms only
 - (b) Anaerobic organisms only
 - (c) Both aerobic and anaerobic
 - (d) None of the above
- (xii) Which of the following statements about fatty acids is correct?
- (a) Fatty acids are used as fuel molecules by all cells
 - (b) Fatty acids are oxidised to acetyl-CoA.
 - (c) Fatty acids are hydrolysed to acetyl-CoA
 - (d) Fatty acids are converted to glucose in the liver
- (xiii) Cori's, McArdle's, von Gierke's and Andersen's diseases are all examples of:
- (a) glycogenolysis
 - (b) gluconeogenesis
 - (c) glycogenosis
 - (d) glycogenesis

- (xiv) The liver synthesizes ketone bodies e.g. acetoacetate and hydroxybutyrate in fasting and starvation but cannot utilize them. Why is that?
- (a) It lacks the enzyme acetyl CoA carboxylase
 - (b) It lacks the enzyme CoA transferase
 - (c) It produces malonyl CoA which inhibits ketone body utilisation
 - (d) The carnitine shuttle exports acetoacetate out of the mitochondria and it cannot be metabolized in the cytosol.
- (xv) What would be the consequences of inhibiting the carnitine shuttle which transports fatty acids into the mitochondria?
- (a) Increase in blood glucose concentration
 - (b) Accumulation of fat droplets in liver and muscle
 - (c) Increase in fatty acid synthesis in the liver
 - (d) Low levels of long chain free fatty acids in the blood
- (xvi) Insulin increases the activities of all of the following enzymes, except
- (a) Glucokinase
 - (b) Pyruvate carboxylase
 - (c) Glycogen synthase
 - (d) Acetyl-CoA carboxylase

- (xvii) β -oxidation of fatty acid is promoted by which of the following?
- (a) ATP
 - (b) NAD^+
 - (c) FADH_2
 - (d) Propionyl CoA.
- (xviii) Which of the following statements about triacylglycerols is correct?
- (a) Triacylglycerols are carried in the blood bound to albumin
 - (b) Triacylglycerols are stored in all cells
 - (c) Triacylglycerols are oxidised to glycerol and fatty acids
 - (d) Triacylglycerols are hydrolysed to glycerol and fatty acids
- (xix) Malonyl-CoA, ACP, and NADPH are involved in:
- (a) β -oxidation
 - (b) Glycolysis
 - (c) Gluconeogenesis
 - (d) Fatty acid biosynthesis.
- (xx) Cholic acid is a(n):
- (a) Amino acid
 - (b) Fatty acid
 - (c) A steroid
 - (d) Triglyceride

2. Answer the following questions (Any Seven) :
(7 × 5 = 35)

- (a) Discuss classification of enzymes according to IUB system giving classical example of each. Give salient features of allosteric inhibition. (2.5+2.5)
- (b) What do you mean by enzyme kinetics? Write an explanatory note on Enzyme Kinetics with appropriate figures. (1+4=5)
- (c) Explain the different enzymatic steps involved in Citric acid cycle. (1+4=5)
- (d) What is oxidative phosphorylation? Explain the different components of Electron Transport Chain with ATP generation sites. (1+4=5)
- (e) What is the difference between α and β oxidation of fatty acids? Explain the different steps involved in β oxidation of fatty acids. (1+4=5)
- (f) What is Hexose Monophosphate Shunt? Explain the reactions of HMP shunt. (1+4=5)
- (g) Discuss in brief about the replication of DNA in prokaryotes. (5)
- (h) What is mutarotation? Explain the different reactions and derivatives of monosaccharide. (1+4=5)
- (i) Write short notes on (any two) : (2.5 + 2.5 = 5)
- (i) Enzyme inhibition
- (ii) Genetic code
- (iii) Nitrogen balance.

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3. Answer the following (any *two*): (2×10=20)
- (a) Discuss the enzymatic steps of aerobic and anaerobic glycolysis with energy production.
 - (b) Differentiate between transcription and translation. Briefly describe the biosynthesis of RNA.
 - (c) Write short notes on: (5+5 =10)
 - (i) Gluconeogenesis
 - (ii) Recombinant DNA technology.
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