[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 996 **E** **Your Roll No.....**

Unique Paper Code : 223403

Name of the Course : **B.Sc. (HONS.) ZOOLOGY**

Name of the Paper : BIOCHEMISTRY – II [ZOHT–406]

Semester : IV

Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. This paper contains seven questions.
3. Answer **five** questions in all.
4. Question No. 1 is compulsory.
5. Write structural formulae where specified.

1. (a) Differentiate between the following : (8)

   (i) Ketogenic and Glucogenic amino acids

   (ii) Oxidative decarboxylation and Oxidative phosphorylation

   (iii) Thiolase and Thiokinase

   (iv) Secondary and Tertiary structure of protein.

   (b) Define : (3)

   (i) Prosthetic Group

   (ii) Oxidative Deamination

P.T.O.

(iii) Isoelectric Point

(c) Name and draw the structures of the following : (3)

(i) A dicarboxylic acid intermediate of TCA cycle.

(ii) 7 C keto sugar.

(iii) A saturated C-16 fatty acid.

(d) Name the contributions of the following : (2)

(i) Peter Mitchell

(ii) E. Knoop

(e) Give the chemical equation of the reactions catalyzed by the following enzymes (use structural formulae) (1½×4=6)

(i) Succinic thiokinase

(ii) α-Ketoglutarate dehydrogenase

(iii) Pyruvate carboxylase

(iv) Carbamoyl synthetase

(f) Select the correct option for each of the following : (3)

(i) The rate limiting step of fatty acid synthesis is catalyzed by

A. Acetyl CoA carboxylase

B. ATP citrate lyase

C. Thiolase

D. malic enzymes

(ii) One of the following processes occur in both mitochondria and cytosol

A. Fatty acid synthesis

B. Urea Cycle

C. TCA cycle

D. Glycolysis

(iii) Avidin inhibits Biotin Prosthetic group of an enzyme.

Which of the following metabolic pathways is inhibited.

A. HMP pathway

B. Gluconeogenesis

C. Fatty acid synthesis

D. Glycolysis

(g) Expand the following : (2)

(i) DHAP

(ii) UDP-G

(iii) LDH

(iv) PEPCK

2. (a) List the key enzymes of gluconeogenesis and explain how they help to by-pass the irreversible steps of glycolysis. (6)

(b) Describe the process of glycogenolysis. How is it regulated ? (6)

3. (a) Give an account of citric acid cycle (use structural formulae). (9)

(b) How are the intermediates of the TCA cycle are replenished ? (3)

4. (a) Explain the synthesis and regulation of glycogen. (8)

P.T.O.

(b) Explain the Cori's cycle with suitable diagram. (4)

5. (a) Elucidate the Michaelis Menten kinetics for a one enzyme-one substrate reaction. (7)

(b) Discuss various factors influencing enzyme activity. (5)

6. (a) Give an account of electron transport chain in mitochondria and its role in ATP synthesis. (7)

(b) Explain β-oxidation pathway of fatty acid breakdown. (5)

7. Write short notes on any **three** of the following : (4×3=12)

(i) Phospholipids

(ii) Ketone bodies

(iii) Oxidative phase of Hexose monophosphate shunt

(iv) Chemiosmotic hypothesis