[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 2392 **F–4** **Your Roll No.....**

Unique Paper Code : 2231403

Name of the Course : **B.Sc. (Hons.) Zoology**

Name of the Paper : Biochemistry of Metabolic Processes

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. Attempt **FIVE** questions in all.
3. Question No. **1** is compulsory.

1. (i) Define the following : (5)
   (a) Coupled reactions
   (b) Phosphagens
   (c) Anaplerotic reactions
   (d) Respiratory control
   (e) Ionophores

   (ii) Differentiate between : (10)
   (a) Glucogenic and Ketogenic amino acid
   (b) Transamination and Deamination
   (c) Glycogenesis and Glycogenolysis
   (d) Transketolase and Transaldolase
   (e) Synthase and Synthetase

   (iii) Give the structure of substrate, product and reaction for following enzymes. (8)
   (a) Thiolase
   (b) Glycerol kinase
   (c) Lactate dehydrogenase
   (d) Ribulose-5-phosphate epimerase

P.T.O.

(iv) Expand the following : (2)

(a) UDPG

(b) NADP

(c) BPG

(d) SGOT

(v) Which Vitamin is required as a cofactor/prosthetic group for the following molecules ? (2)

(a) Pyruvate dehydrogenase

(b) FMN

(c) Pyruvate Carboxylase

(d) NAD

2. (a) Describe Urea cycle with the help of chemical structures and diagrams. (9)

(b) Discuss briefly the process of ketogenesis. (3)

3. (a) Give a detailed account of β-oxidation of fatty acids. (9)

(b) How many acetyl CoA and ATP molecules are formed at the end of complete oxidation of one palmitic acid ? (3)

4. (a) Elaborate the pathway of gluconeogenesis. How it is different in ruminants ? (10)

(b) What is the significance of carboxylation/decarboxylation reactions in the above context ? (2)

5. Trace the path of electrons starting from Complex-I to molecular oxygen. Also discuss oxidative phosphorylation in its reference. (12)

6. (a) Elucidate the metabolic pathway of biosynthesis of palmitic acid. (6)

(b) Diagrammatically represent the citric acid cycle (no discussion required). (6)

7. Write short notes on **any three** of the following :

(a) Shuttle system

(b) Regulation of Ketogenesis

(c) Inhibitors and uncouplers of ETS

(d) Cofactors (4,4,4)

(1500)