4. (i) Explain the hexose Monophosphate shunt with structural formula and its physiological importance. (10)

(ii) Explain the role of transamination in the catabolism of amino acids. Support your answer with suitable examples. (5)

5. (i) Describe omithine-citrulline cycle, represent chemical reaction with structures and enzymes only. (10)

(ii) What is gluconeogenesis? Gluconeogenesis is energetically expensive but essential. Explain. (5)

6. Write short notes **(Any three)** : (3×5=15)

(i) Fate of C-skeleton of amino acids

(ii) Omega Oxidation of Fatty acid

(iii) Glycogen Metabolism

(iv) Shuttle system

(v) Cascade of metabolic events in fasting and starvation

[This question paper contains 4 printed pages.]

29.12.2023(M)

Your Roll No.....

Sr. No. of Question Paper : 1577 **G**

Unique Paper Code : 2232012302

Name of the Paper : Biochemistry : Metabolic Processes

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

Semester : III

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **four** questions including Question No. **1** which is compulsory.
3. Draw well-labelled diagrams wherever necessary.

1. (i) Define the following terms **(Any four)** : (1×4=4)

(a) Ubiquinone

(b) Chemiosmosis

(c) Ketogenesis

(d) Substrate level phosphorylation

(e) Catabolism

(f) Uridine Diphosphate Glucose (UDPG)

(ii) Differentiate between **(Any two)** : (2×2=4)

(a) Phosphofructokinase I and Phosphofructokinase II

(b) Glycogen phosphorylase and Glycogen synthase

(c) Acyl CoA and Acetyl CoA

(d) SGOT and SGPT

(e) Phosphoenolpyruvate carboxykinase and Pyruvate kinase

(iii) Write the steps to bring about the following conversions with Structural formula **(Any two)** : (2×2=4)

(a) Pyruvate to Acetyl CoA

(b) Succinyl CoA to Succinate

(c) Fatty acid to Fatty acyl CoA

(d) Aspartate to Glutamate

(iv) Give reasons for the following **(Any Three)** : (1×3=3)

(a) Elevated level of glucose and acetone in untreated diabetes mellitus.

(b) Strenuous exercise leads to an increase in formation of lactate.

(c) Upon entering a cell glucose is phosphorylated. Give two reasons why this reaction is required.

(d) Role of biotin in Fatty acid oxidation

2. (i) Trace the path of electrons starting from Complex-I to Molecular Oxygen. Also discuss oxidative phosphorylation in its reference. (12)

(ii) Give any three reactions catalyzed by dehydrogenases in Kreb's Cycle. (3)

3. (i) Elucidate the metabolic pathway for the biosynthesis of palmitic acid. Give the Structure of fatty Acid Synthase Complex. (9)

(ii) Enumerate the steps of glycolysis with chemical structures. (6)

P.T.O.