Paper No. : 7106 **(2 – Pages)**

Unique Paper Code: **2230522301/2232522301**

Name of the Paper: **DSC-LS-ZOO – Biochemistry: Basic Concepts of Metabolism**

Name of the Course: **B.Sc. (Programme) Life Sciences**

Semester: **III (NEP-UGCF)**

Duration: **2 hours**

Maximum Marks: **60 Marks**

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of the question paper.
2. Attempt any '**four**' Questions in total. **Question No. 1 is compulsory.**
3. Draw structures wherever necessary
4. Attempt all parts of the question together. All questions carry equal marks.

1. (i) Define (*any three*) : (3)

a) Anaplerotic reactions
b) Feedback inhibition
c) Coenzyme
d) Oxidative phosphorylation

(ii) Differentiate between (*any three*): (6)

a) Covalent catalysis and acid-base catalysis
b) Monosaccharides and disaccharides
c) Co-enzyme and cofactor
d) Transamination and deamination

(iii) Fill in the blanks : (3)

a) Molecule bound in the active site and acted upon by enzyme is called _____.
b) Name the only two carbon compound entering the citric acid cycle _____ .
c) NAD is a form vitamin B _____ .
d) _____is epimer of glucose at C-4 carbon position.
e) Glucose -6- phosphatase is present only in these tissues _____ and _____.

(iv) Give <u>full form</u> of (*any three*): (3)

a) PDH
b) NADPH
c) TPP
d) PEP

2. Elaborate citric acid cycle with chemical structures. Give an account of amount of energy yield in terms of ATP and explain the regulatory controls of the cycle. **(15)**

3. a) Describe metabolic pathway for biosynthesis of palmitic acid. **(9)**
b) Add a note on structural and storage lipids. **(6)**

4. a) Elaborate the role of respiratory chain complexes in oxidative phosphorylation. **(9)**
b) Explain how three irreversible reactions of glycolysis are bypassed in gluconeogenesis. **(6)**

5. a). Explain the different levels of organization in protein structure and describe various types of molecular interactions that contribute to the stabilization of each level. **(9)**
b) Illustrate the classification of enzymes with examples. **(6)**

6. Write short notes on **any three** of the following: **(5 X 3 =15)**

a) Glutamine formation and significance
b) Chemiosmotic theory
c) Mechanism of enzyme action
d) Glucose-alanine cycle

(2000)