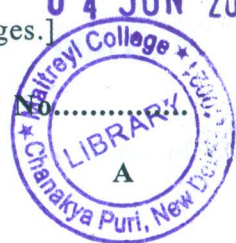


[This question paper contains 4 printed pages.]

04 JUN 2022

Your Roll No.



Sr. No. of Question Paper : 1400

Unique Paper Code : 32231403

Name of the Paper : Biochemistry of Metabolic Processes

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

Semester : IV, Core

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.
4. Illustrate your answers with diagrams/structures wherever necessary.

1. (a) Define the following : (5)

(i) Ubiquinone

(ii) Fermentation

(iii) Oxidative deamination

P.T.O.

(iv) Reducing equivalents

(v) Ketosis

(b) Expand the following :

(3)

(i) PEPCK

(ii) NADP

(iii) HMG-CoA

(iv) PLP

(v) UDPG

(vi) ALT

(c) Differentiate between the following :

(10)

(i) Oxidative phosphorylation and Substrate level phosphorylation

(ii) Ketonuria and Phenylketonuria

(iii) Glycogenolysis and Glycogenesis

(iv) Anabolism and Catabolism

(v) Hexokinase and Glucokinase

(d) Fill in the blanks :

(5)

(i) Glucose 6-phosphate is converted to glucose by _____ enzyme in the liver.

(ii) Biotin is required for the functioning of _____ enzyme.

(iii) _____ is another name for pentose phosphate pathway.

(iv) The ω -oxidation of fatty acids occurs in _____ .

(v) Nitrogen of Urea molecule comes from _____ and _____ .

(e) Write the reaction catalyzed by the following enzymes (with structures): (4)

(i) Pyruvate carboxylase

(ii) Lactate dehydrogenase

(iii) PFK

(iv) Glycerol phosphate dehydrogenase

2. (a) Give a detailed account of the Citric acid cycle with the help of structures. (9)

(b) Add a short note on the Cori cycle. (3)

3. (a) Describe Ornithine cycle in detail specifically mentioning steps that take place in the cytoplasm and mitochondria. (9)

- (b) How does our body metabolically adapt during prolonged starvation? (3)
4. (a) Describe in detail various steps of pentose phosphate pathway (only diagrammatic representation). (9)
- (b) What is the role of debranching enzyme in glycogenolysis. (3)
5. (a) Describe the process of beta-oxidation of C-16 saturated fatty acid. (9)
- (b) What extra steps are required for the oxidation of saturated fatty acids with odd number of carbon atoms. (3)
6. (a) Give a detailed account of the structure of ATPase complex. (6)
- (b) Explain the chemical mechanism that couples proton flux with phosphorylation? (6)
7. Write short notes (**any three**): (4×3=12)
- (i) Fate of Carbon skeleton of ketogenic amino acids
 - (ii) Shuttle systems
 - (iii) Oxidative decarboxylation of Pyruvate
 - (iv) Hydrophobic electron carriers