

Total No. of Questions – 10]
(2023)

[Total Pages : 3

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M.Sc. Botany (CBS) Ist Semester Examination

BIOCHEMISTRY AND METABOLISM

(Common with MZOO-103)

Paper–MBOT-103

Time : Three Hours]

[Maximum Marks : 40

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.

Note : Attempt any *five* questions selecting at least *two* from each Section. Attempt all parts of the question together. All questions carry equal marks.

SECTION-A

1. Explain the following :

(a) Michaelis Menten equation and its role in understanding Enzyme activity.

(b) What are saturated and unsaturated fatty acids? What is Beta oxidation? (4,4)

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2. (a) What are proteins? With the help of illustrations, explain the levels of organisation. (3,3)
- (b) Discuss the Krebs's cycle and its regulation. (4,4)

3. (a) Write notes on :
- (i) Chemiosmotic model.
- (ii) Classes of nucleic acids.
- (b) The synthesis of glycogen and glycogenolysis are tightly regulated. Justify the comment. (4,4)

4. (a) Describe the biosynthesis and function of steroids.
- (b) Write notes on :
- (i) Importance of Acetyl Co A in intermediary metabolism.
- (ii) Redox potential. (4,4)

5. (a) With Chymotrypsin as a model, discuss mechanism of enzyme activity.
- (b) Discuss :
- (i) Classes of Amino acids.
- (ii) Competitive inhibition. (4,4)

SECTION-B

6. (a) Describe *de novo* & salvage pathway.
- (b) Discuss the Hexose monophosphate shunt. How does it benefit the system? (4,4)

7. (a) Describe the Urea cycle. Does it have any connection with TCA cycle?
- (b) How are triacyl glycerides synthesized? Discuss the structure and role of Fatty acid synthase. (4,4)

8. (a) Metabolism is associated with errors. Discuss the resulting defects of Carbohydrate metabolism.

- (b) What is the relation between Free Energy, Entropy and Enthalpy? Describe the law(s) associated with them. (4,4)

9. (a) Discuss the classification of Enzymes with examples.

- (b) Write notes on :

(i) Transamination and Deamination.

(ii) Role of coupled reactions in cell. (4,4)

10. (a) Describe the Krebs's cycle and its regulation.

- (b) Write notes on :

(i) Factors affecting enzyme activity.

(ii) Types of RNA. (4,4)