

**M.Sc. BOTANY**  
**I SEMESTER EXAMINATION DECEMBER 2023**

Paper Name: **Plant Biochemistry and Metabolism**

Paper Code: **MBO-CC103**

Time: **2 ½ hours**

Maximum Marks: **60**

Note: This paper has 3 sections A, B, and C.

Section A: Answer **all the questions**.

Section B: Attempt any **04 out of 06**

Section C: Attempt any **02 out of 03**

Abbreviations used:

CLO-Course Learning Outcomes

**CO1:** explain the principles of bioenergetics and principles, kinetics and regulation of enzymes (understand);

**CO2:** interpret the composition, structure and function of carbohydrates, proteins, vitamins, lipids and nucleic acids (evaluate);

**CO3:** examine the conformation and stability of proteins and nucleic acids (analyze); and

**CO4:** recognize the metabolism of carbohydrate, lipids and nucleic acids (remember).

**BTL-Bloom's Taxonomy Levels**

1- Remembering, 2-Understanding, 3-Applying, 4-Analyzing, 5-Evaluating, 6-Creating

**SECTION A**

Very Short Type Question (15 questions)

15 x 1 = 15 marks

| Q.No. | Question                                                                                                         | Marks | CLO  | BTL |
|-------|------------------------------------------------------------------------------------------------------------------|-------|------|-----|
| 1     | Define isozyme with one example.                                                                                 | 1     | 1    | 2   |
| 2     | What are energy rich compounds? Write the names of 3 such compounds.                                             | 1     | 1    | 1   |
| 3     | Name two fat soluble vitamins.                                                                                   | 1     | 2    | 1   |
| 4     | Define entropy.                                                                                                  | 1     | 1    | 2   |
| 5     | Differentiate between ribose and deoxyribose sugar.                                                              | 1     | 2, 4 | 2   |
| 6     | Write the name of an aromatic amino acid.                                                                        | 1     | 2    | 3   |
| 7     | Explain the Wobble hypothesis?                                                                                   | 1     | 2    | 2   |
| 8     | What is the site of oxidative phosphorylation?                                                                   | 1     | 1    | 1   |
| 9     | Differentiate between ligases and lyases.                                                                        | 1     | 1    | 2   |
| 10    | Write important functions of vitamins.                                                                           | 1     | 2    | 2   |
| 11    | Write the composition of nucleoside and nucleotide.                                                              | 1     | 2    | 1   |
| 12    | Which carrier does carry electrons between Complex I and Complex III of mitochondrial electron transport system? | 1     | 1    | 1   |
| 13    | Differentiate between holoenzyme and apoenzyme.                                                                  | 1     | 1    | 2   |
| 14    | Write the basic structural unit of lipid.                                                                        | 1     | 2    | 1   |
| 15    | Name the bond that joins amino acids in a peptide.                                                               | 1     | 3    | 1   |

## **SECTION B**

Short Type Question. (Attempt any **FOUR**)

4 x 5 = 20 marks

| <b>Q.No.</b> | <b>Question</b>                                                                                                                         | <b>Marks</b> | <b>CLO</b> | <b>BTL</b> |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------|------------|------------|
| 1            | Define the enzyme. Write the principle and mechanism of action of enzymes. Explain, how various factors affect the activity of enzymes. | 5            | 1          | 3, 4       |
| 2            | Briefly list the components of electron transporter system along with their potential inhibitors.                                       | 5            | 1          | 2          |
| 3            | Write a note on various forms of DNA                                                                                                    | 5            | 2          | 2          |
| 4            | Describe various steps of glycolysis.                                                                                                   | 5            | 3          | 2          |
| 5            | Write a note on Exothermic and endothermic reactions, with examples.                                                                    | 5            | 1          | 3          |
| 6            | Write a note on fatty acid biosynthesis.                                                                                                | 5            | 1          | 2          |

## **SECTION C**

Long type Question (Attempt any **TWO**)

2 x 12.5 = 25 marks

| <b>Q.No.</b> | <b>Question</b>                                                     | <b>Marks</b> | <b>CLO</b> | <b>BTL</b> |
|--------------|---------------------------------------------------------------------|--------------|------------|------------|
| 1            | Write in details about the structure and function of carbohydrates. | 12.5         | 2          | 3          |
| 2            | Describe the primary, secondary and tertiary structure of proteins. | 12.5         | 2          | 3          |
| 3            | Write the structure, function and metabolism of nucleic acids.      | 12.5         | 2, 4       | 3          |

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