B.Sc. 5th Semester (Honours) Examination, 2023 (CBCS)

Subject : Botany

Course : CC-XII

(Plant Metabolism)

Time: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words
as far as practicable.

1. Answer *any five* of the following questions: 2×5=10

    (a) Differentiate between entropy and enthalpy.

    (b) Cite two non-reversible reactions of glycolytic pathway.

    (c) What is meant by 'dimorphic chloroplasts'? Which photosynthetic pathway exhibits this property?   1+1

    (d) Write down the dual role of RUBISCO.

    (e) How many Kinases are in the MAP Kinase Cascade? Name them.

    (f) What do you mean by C 18 : 2 Δ 9, 12?

    (g) What is PUFA? Give an example.

    (h) Mention the characteristic features of allosteric enzymes.

2. Answer *any two* of the following questions: 5×2=10

    (a) Briefly describe the mechanism of nodule formation in leguminous plants.

    (b) Briefly describe the β-Oxidation of fatty acids.

    (c) Schematically represent the glyoxylate cycle. Mention its metabolic significance.

    (d) Schematically present the metabolic reactions of CO_2 fixation in C-4 plants.

3. Answer *any two* of the following questions: 10×2=20

    (a) Briefly describe the biochemical events of photorespiration mentioning the subcellular organelles where the reactions are operated. How does this process regulate water use economy of plants?   8+2

    (b) Why do the reactions of Krebs Cycle stop in absence of oxygen? Highlight the oxidative decarboxylation steps in the cycle mentioning the enzymes involved in these steps.   2+8

    (c) What is Q-cycle in photosynthesis? Schematically represent it.

    (d) Explain briefly the modern view of electron transport system and oxidative phosphorylation of mitochondria.   4+6