

2025

BOTANY — HONOURS

Paper : CC-14

(Plant Metabolism)

Full Marks : 50

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* questions : 2×5
 - (a) What are 'isozymes'? Give an example.
 - (b) Write down the chemical structure of 'Chlorophyll b'.
 - (c) Mention the anaerobic fate of Pyruvic acid in cytoplasm.
 - (d) How Serine is formed from Glycine during Photorespiration?
 - (e) What do you mean by anaplerotic reaction?
 - (f) What do you mean by 'Kranz anatomy'?
 - (g) Write down the reaction catalyzed by the enzyme GOGAT.
 - (h) What is the function of 'G protein'?
2. Answer *any two* questions : 5×2
 - (a) Mention the biological significance of carotenoid pigments.
 - (b) How Calcium Calmodulin System transduces cellular signal?
 - (c) How many ATP molecules will be produced after complete oxidation of a molecule of C-16 fatty acid? Justify your answer.
3. Answer *any three* questions :
 - (a) What do you mean by preparatory and pay off phases of EMP pathway? Mention the regulation of this pathway. Schematically mention the irreversible reactions in EMP pathway. 2+5+3
 - (b) Describe the role of leg haemoglobin in biological nitrogen fixation. Diagrammatically represent the process of nodule formation in leguminous plants. 4+6
 - (c) Write notes on : 5×2
 - (i) MAP Kinase signaling cascade in plants.
 - (ii) Water splitting mechanism during photosynthesis.
 - (d) Describe the mechanism of CAM with biochemical reactions. Mention the ecological significance of CAM. 7+3
 - (e) Schematically represent the reactions of Glyoxylate cycle. Discuss, in brief, the breakdown process of Triglyceride. 5+5