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