

2021

BOTANY — HONOURS

Paper : CC-14

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 the following questions (*any five*): 2×5
 - (a) Where does substrate level phosphorylation occur in glycolysis?
 - (b) What is 'Quantasome'? Write the chemical formula of chlorophyll a.
 - (c) What is 'uncoupler'? Cite one example.
 - (d) What is an 'action spectrum'?
 - (e) What is the function of 'G protein'?
 - (f) Write down the reaction catalysed by the enzyme 'GOGAT'.
 - (g) Define isoenzyme with example.
 - (h) How is triglyceride formed?

2. Answer *any two* questions from the following: 5×2
 - (a) Mention the biological significance of carotenoid pigments.
 - (b) Mention the biochemical reactions involved in the conversion of pyruvate to Acetyl CoA.
 - (c) Write notes on allosteric regulation of enzymes with examples.

3. Answer *any three* questions from the following:
 - (a) Why is the pentose phosphate pathway also called a shunt pathway? Schematically describe the pathway giving structures of substrates and products with the names of enzymes involved in each step. 2+8
 - (b) 'Crassulacean Acid Metabolism in an ecophysiological adaptation of desert plants.' Justify the statement with biochemical details. How do CAM plants differ from C₄ plants? 6+4
 - (c) Discuss the role of Ca²⁺ as second messenger with reference to signal transduction pathway. 10
 - (d) Write down the biochemical reactions of β oxidation of fatty acids. Mention the stoichiometry of ATP production after complete oxidation of palmitic acid (C = 16). 6+4
 - (e) Describe the biochemistry of Nitrogen fixation with special reference to the role of Nitrogenase and leg-haemoglobin. 6+4
