Total number of printed pages-4

3 (Sem-6/CBCS) BOT HC 1

Acc. Ho.

2024

BOTANY

(Honours Core)

Paper: BOT-HC-6018

(Plant Metabolism)

Full Marks: 60

Time: Three hours

The figures in the margin indicate full marks for the questions.

- 1. 8 Answer the following questions: 1×7=7
 - (a) Name the type of the metabolic pathway which is involved in the synthesis of compounds in plant bodies.
 - (b) What is the first stable product in the C4 pathway?
 - (c) Which of the given lights are strongly absorbed by plants?
 - (i) Indigo and Yellow ODAISION

Total number of printed pages-4

3 (Sem-6/CBCS) BOT HC 1

2024

BOTANY

(Honours Core)

Paper: BOT-HC-601

(Plant Metabolism)

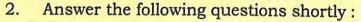
Full Marks: 60

Time: Three hours

The figures in the margin indicate full marks for the questions.

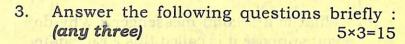
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- Yellow and Violet
- Blue and Red
- (iv) Orange and Violet
- Name the enzyme which catalyses the conversion of N₂ into ammonia during the biological Na fixing process.
- Name one simple lipid.
- Which enzyme is required for the synthesis of ATP?
- The end product of glycolysis under anaerobic conditions is (Fill in the blank)



2×4=8

- (a) Write the roles of PS-II during photosynthesis.
- Write a note on ATP as high energy molecule.
- Define aerobic respiration.
- Distinguish between RuBP and RuBisCO.



- Explain Glycolysis. State its end products. In both aerobic and anaerobic respiration, determine the fate of these products.
- Discuss the key events and outcomes of the light reaction of photosynthesis.
- Discuss different types of nitrogen-fixing bacteria and their symbiotic relationships with plants.
- Explain the mechanisms of enzyme inhibition with suitable example.
- What is meant by the term 'signal transduction'? What are some of the steps by which signal transduction can occur?
- Answer the following questions as instructed: (any three) 10×3=30
 - Explain how the irreversible reaction by catalysed the pyruvate dehydrogenase complex leads to the entry of acetyl-CoA into the TCA cycle. Why cannot acetyl-CoA be used as a substrate for gluconeogenesis?

4+6=10

- (b) What is a second messenger? Why do you suppose it is called this? Elucidate the role of calcium-binding proteins eliciting a response. 2+2+6=10
- (c) Distinguish between aerobic respiration and anaerobic respiration. Explain the significance of oxygen in aerobic respiration in the context of ETS.

3+7=10

- (d) Describe the β -oxidation pathway of fatty acid degradation. Draw the glyoxylate cycle. 6+4=10
- (e) Why do you suppose RuBisCO performs more carboxylation in C4 plants than in other plants? Explain the Hatch and Slack pathways with proper schematic sketch.

 4+6=10
- (f) What are mono, oligo and polysaccharides? Describe their role"in plant metabolism. 3+7=10

