

U.G. 5th Semester Examination - 2022**BOTANY****[HONOURS]****Course Code : BOTH-CC-T-12****(Plant Metabolism)**

Full Marks : 40

Time : $2\frac{1}{2}$ Hours*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any five of the following: 2×5=10
- a) How many molecules of ATP are synthesized from complete oxidation of glucose via glycolysis and TCA cycle?
 - b) What is leghemoglobin?
 - c) What do you mean by allosteric regulation of enzyme activity?
 - d) How starch is broken down by diastase?
 - e) What do you mean by uncouplers and what is their role in ATP synthesis?
 - f) What are quantasomes?
 - g) What is respiratory quotient?
 - h) Name one saturated and one unsaturated fatty acid.

[Turn over]

2. Answer any two of the following: $5 \times 2 = 10$

- a) State the role of calcium calmodulin in signal transduction.
- b) Distinguish between absorption spectrum and action spectrum of chlorophyll.
- c) What is the difference between photophosphorylation and oxidative phosphorylation?
- d) Give a brief account of photosystem I and Photosystem II.

3. Answer any two of the following: $10 \times 2 = 20$

- a) Give a schematic representation of Calvin cycle with proper structures. What is the significance of this pathway? $7 + 3 = 10$
- b) Distinguish between C_3 and C_4 plants. Why C_4 plants are considered more efficient in fixing CO_2 than C_3 plants? Explain. $5 + 5 = 10$
- c) What do you understand by proton motive force? What is its function? Give a comparative account of proton motive force in mitochondria and chloroplast. $3 + 2 + 5 = 10$
- d) Give a brief account of photorespiration. Why it is called C_2 cycle? What is its significance? $6 + 2 + 2 = 10$

