TM252402O 19/3/25 O/C

Reg. No :.....

Name :.....

MASTER'S DEGREE (C.S.S) EXAMINATION, MARCH 2025

2020, 2021, 2022, 2023 ADMISSIONS SUPPLEMENTARY

SEMESTER II - CORE COURSE BOTANY

BO2C07TM20 - Plant Physiology and Biochemistry

Time : 3 Hours **Maximum Weight : 30**

Part A

I. Answer any Eight questions. Each question carries 1 weight **(8x1=8)**

1. Distinguish between active and passive absorption of water.
2. Explain the significance of the structure of chloroplast in light harvesting.
3. Explain C4 plants with an example. Why are they considered more efficient than C3 plants?
4. Draw a flowchart of the complete steps involved in anaerobic respiration.
5. Define RQ. With examples, explain its significance.
6. What are amides? What is their significance?
7. What are the coping mechanisms exhibited by plants to withstand salt stress?
8. What are epimers? Write a brief note on epimers of glucose.
9. Describe glyoxylate cycle.
10. Describe the kinetic equation of enzyme action.

Part B

II. Answer any Six questions. Each question carries 2 weight **(6x2=12)**

11. Enlist the characteristic features of the anatomy of the stomata.
12. What are aquaporins? Discuss its structure and functions.
13. Discuss the Glycolate pathway and its significance.
14. What is ETS? Explain the major events taking place.
15. Which is the common respiratory pathway that takes place in the cytoplasm? Explain the process emphasizing the enzymes and the net energy output.
16. Give an account on the mechanism by which plants cope up with biotic stress.
17. Derive and explain pKa based on Henderson-Hasselbalch equation.
18. What are the strategies to improve the stability of enzymes?

Part C

III. Answer any Two questions. Each question carries 5 weight **(2x5=10)**

19. Elaborate on the methods of water absorption by plants.
20. What is light independent reaction in photosynthesis? How do C3 plants fix CO2 into sugars?
21. What is nitrogen fixation? Elucidate the process of biological nitrogen fixation.
22. Explain in detail the classification and important biological functions of lipids.