

Reg. No. :

Name :

Second Semester M.Sc. Degree (C.B.C.S.S. – O.B.E. – Reg./Supple./Imp.)
Examination, April 2026
(2023 Admission Onwards)
BOTANY
MSBOT02C09 : Plant Physiology and Biochemistry

Time : 3 Hours

Max. Marks : 60

PART – A

Answer **any five** questions. **Each** question carries **3** marks.

1. Describe the ABC Model of floral organ development.
2. Briefly differentiate between innate and acquired immunity.
3. Mention the six major classes of enzymes according to the IUBMB classification.
4. Define a 'Zwitterion' in the context of amino acids.
5. Define Reactive Oxygen Species (ROS) and their impact on plants.
6. Summarise the general functions of Hormones.

(5×3=15)

PART – B

Answer **any three** questions. **Each** question carries **6** marks.

7. Compare and contrast the mechanisms of cyclic and non-cyclic, photophosphorylation.
8. Define and classify high-energy compounds with suitable examples.
9. Discuss the significance of the Ramachandran Plot in protein biochemistry.
10. Distinguish between primary and secondary immune responses. Explain why the secondary response is generally faster and more robust.
11. Explain the genetics of nitrogen fixation and the role of the nitrogenase enzyme complex in converting atmospheric nitrogen.

(3×6=18)

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PART – C

Answer **any three** questions. **Each** question carries **9** marks.

12. Provide a comprehensive classification of Lipids (Simple, Complex and Derived). Discuss the structural importance and physiological functions of phospholipids and steroids in plant cellular membranes.
13. Critically analyse the organization of the mitochondrial electron transport chain in plants and evaluate its role in ATP synthesis through oxidative phosphorylation.
14. Compare and analyse C_3 , C_4 and CAM pathways and evaluate their ecological and physiological significance.
15. Discuss glycolysis in detail and critically analyse its regulation and significance in cellular metabolism.
16. Explain enzyme kinetics and critically evaluate the Michaelis-Menten model with reference to K_m and V_{max} .

(3×9=27)