K24U 2715

Reg. No. : .....

Name : .....

V Semester B.Sc. Degree (C.B.C.S.S. – O.B.E. – Regular/Supplementary/ Improvement) Examination, November 2024
(2019 to 2022 Admissions)
CORE COURSE IN BOTANY/PLANT SCIENCE
5B07BOT/PLS : Plant Physiology and Metabolism

Time : 3 Hours Max. Marks : 40

PART – A
(Objective Type Questions)

Answer **all** : **(4×1=4)**

1. Which of the following is a macronutrient required by plants ?
   a) Zinc b) Magnesium
   c) Manganese d) Boron
2. Which form of movement in plants is associated with light ?
   a) Phototropism b) Gravitropism
   c) Hydrotropism d) Thigmotropism
3. The primary molecule responsible for energy transfer in cells is
   a) ATP b) NADH
   c) FAD d) NADPH
4. Which of the following is a secondary metabolite in plants ?
   a) Glucose b) Chlorophyll
   c) Lignin d) Ribulose

P.T.O.

PART – B
(Short Essay Questions)

Answer **any eight** : **(8×2=16)**

5. Define osmosis and describe its role in plant-water relations.
6. What is the significance of the nitrogen cycle in plant nutrition ?
7. Explain the role of chloroplasts in photosynthesis.
8. What is photophosphorylation and where does it occur in plants ?
9. Differentiate between apical dominance and photoperiodism.
10. Describe the process of glycolysis.
11. What is meant by chemiosmosis ?
12. How do plants manage water loss through transpiration ?
13. Explain the function of the enzyme Rubisco.
14. What is oxidative phosphorylation ?
15. Comment on the role of gibberellins in plant growth.
16. Describe the structure and function of cellulose in plants.

PART – C
(Essay Questions)

Answer **any four** : **(4×3=12)**

17. Write a short note on the Calvin cycle.
18. Discuss the importance of micronutrients in plant metabolism.
19. Describe the light-dependent reactions in photosynthesis.
20. Explain the process of nitrogen fixation in legumes.
21. Discuss the role of auxins in plant growth and development.
22. Describe the biochemical pathway of the Krebs cycle.

PART – D
(Long Essay Questions)

Answer **any one** : **(1×8=8)**

23. Explain in detail the mechanisms of water uptake and transport in plants, including the roles of xylem and root pressure.
24. Describe in detail the structure, function and types of carbohydrates found in plants.
25. Explain how the energy in sunlight is captured and converted into chemical energy during photosynthesis. Include a discussion on the Z-scheme and the role of ATP and NADPH in the Calvin cycle.
