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Sixth Semester B.Sc. Degree Examination, April 2022

First Degree Programme under CBCSS

Botany

Core Course IX

BO 1641 : PLANT PHYSIOLOGY AND BIOCHEMISTRY

(2019 Admission)

Time : 3 Hours

Max. Marks : 80

(Draw diagrams wherever necessary)

SECTION – A

I. Answer **all** questions in one word or two sentences. Each question carries **1** mark.

1. What is imbibition?
2. Name three elements essential for plant growth.
3. What is aeroponics?
4. What is a photosynthetic unit?
5. Write an example of allosteric enzyme in metabolic pathways.
6. What is the function of sphingolipids?
7. Give the names of two Sulfur-containing amino acids.

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8. What causes vernalization?

9. Who gave the mechanism of pressure-flow hypothesis?

10. How does chemosynthesis produce energy?

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. Each question carries **2** marks.

11. Explain key differences between water potential and osmotic potential.

12. How is stomatal transpiration different from lenticular transpiration.

13. Briefly explain the red drop.

14. Describe energy relation of respiration.

15. What is senescence and its causes in plants?

16. Briefly explain the primary role of monosaccharides do in plants?

17. Describe the different types of protein structures.

18. How are lipids and fatty acids similar?

19. How are enzymes named systematically by enzyme commission?

20. What are the functions of the secondary products in plants?

21. Explain the plant circadian rhythms.

22. Briefly explain the Hill reaction.

23. What is the importance of knowing the physiology of horticultural crops?

24. What is the role of ionic bonds in the structure of proteins?

25. How does phloem transport food?

26. What plants are CAM Plants?

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** of the following. Each question carries **4** marks.

27. Differentiate between cofactors and coenzymes.

28. What are derived lipids? Describe its function.

29. How is an ester bond formed?

30. What is the mechanism of reductive amination?

31. Salinity is a major abiotic stress limiting growth and productivity of plants. Discuss.

32. What are phytochromes and write its significance?

33. Describe the plant growth regulators.

34. Explain the factors affecting photosynthesis.

35. How does ascent of sap occurs in tall trees?

36. What is dark reactions in plants?

37. What are the similarities and dissimilarities between fluorescence and phosphorescence?

38. Briefly describe the process of protein hydrolysis.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Each question carries **15** marks.

39. Explain the-process of Krebs cycle with steps and diagram.

40. What is biological nitrogen fixation and explain its process? How crop rotation helps restore nitrogen to the soil?

41. How amino acids are classified based on polarity and structure? Briefly describe the amphoteric property of amino acids.

42. What are phytochemicals? Describe the following phytochemicals : (a) Alakaloids (b) Terpenoids (c) Phenolics (d) Flavonoids.

43. Write an account of Ascent of sap in plants. Explain vital and physical theories.

44. Write an essay on structure and functions of monosaccharides, oligosaccharides and polysaccharides you have studied.

(2 × 15 = 30 Marks)