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**Fourth Semester B.Sc. Degree Examination, August 2022**

**First Degree Programme under CBCSS**

**Botany**

**Complementary Course**

**BO 1431 – PLANT PHYSIOLOGY, PLANT ECOLOGY, HORTICULTURE AND PLANT BIOTECHNOLOGY**

**(2019 Admission Onwards)**

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. **Each** question carries **1** mark.

1. Give an example for chemical sterilant.
2. What is the purpose of using laminar air flow chamber in tissue culture procedure?
3. What is hydrosere?
4. Define light reaction.
5. What is Photophosphorylation?
6. What are estuaries?
7. State the law of limiting factors.

P.T.O.

8. What is guttation?

9. For what specific purpose does garden hoe is used?

10. What is ground layering?

**(10 × 1 = 10 Marks)**

## SECTION – B

Answer any **eight** of the following. Each question carries **2** marks.

11. Elaborate the terms caulogenesis and rhizogenesis.

12. What is hardening? Explain its significance.

13. What are the three types of transpiration?

14. Explain the types of ecological succession.

15. Write a brief note on vermicomposting.

16. What are the advantages of using sphagnum moss as a horticultural growing media?

17. Explain Donnan equilibrium.

18. Explain the characteristic features of desert ecosystems.

19. Define RQ. What is the value of RQ for glucose?

20. What is membrane potential?

21. What is Hill reaction?

22. Differentiate between osmosis and diffusion.

23. What is trophic level? Which trophic level does herbivores and carnivores usually occupy?

24. Explain plasmolysis and its importance.

25. What are quantasomes? Mention their function.

26. Explain the pressure flow hypothesis proposed by Ernest Munch, regarding the movement of sap through phloem.

**(8 × 2 = 16 Marks)**

## SECTION – C

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

27. With the help of a neat labelled diagram, explain patch budding.

28. Write a comparison of organic and inorganic fertilizers.

29. Explain the features of an energy pyramid with a diagram.

30. Explain the morphological, anatomical and physiological adaptations found in hydrophytes to survive and grow in the habitats where they grow.

31. Describe photorespiration.

32. Compare and contrast PSI with PSII.

33. What is glycolysis? Give the steps involved in glycolysis.

34. Write a brief description of CAM photosynthesis.

35. Explain the significance of transpiration in plants.

36. Differentiate between active and passive absorption of water by plants.

37. Write a brief account on anther culture and its applications.

38. What are the major components of MS medium?

**(6 × 4 = 24 Marks)**

## SECTION – D

Write an essay on any **two** of the following, each carry **15** marks.

39. Explain briefly, the steps involved in the regeneration of plants through plant tissue culture.

40. Explain the various methods of vegetative propagation of plants.

41. Compare and contrast between C3 and C4 plants.

42. Write an essay on the physiological effects and mechanism of action of different plant growth regulators.

43. Write an account on the essential elements required for normal growth and reproduction of plants, their main functions, and specify the symptoms developed in plants due to the deficiency of each.

44. Write an account on the biotic and abiotic components in an ecosystem.

**(2 × 15 = 30 Marks)**

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