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Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, May 2022

First Degree Programme under CBCSS

Botany

Core Course IX

BO 1641 — PLANT PHYSIOLOGY AND BIOCHEMISTRY

(2015 and 2016 Admission)

Time : 3 Hours Max. Marks : 80

I. Answer **all** questions in **one or two** sentences. All questions are compulsory. Each carries **1** mark.

1. What is guttation?
2. Differentiate between macronutrients and micronutrients. Give one example each for the two groups.
3. Name the cellular locations of (a) glycolysis and (b) Krebs' cycle.
4. What are the basic physiological functions of xylem and phloem?
5. What is photoperiodism?
6. What are tactic movements? Give one example.
7. Why glucose and sucrose differ in their ability to reduce other compounds?
8. What are phospholipids?
9. Differentiate between coenzymes and cofactors.
10. Write the structure of glycerol.

(10 × 1 = 10 Marks)

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

11. Explain the lock and key model of enzyme substrate relationship.

12. What are polyunsaturated fatty acids? Cite one example.

13. Why the bond connecting fatty adds and glycerol in tryglycerols is called an ester bond?

14. Write the structural formula of maltose.

15. Describe the starch-sugar conversion hypothesis. How the hypothesis explains stomatal movement?

16. List out the effects of drought on plants.

17. Define seed dormancy? List out any two reasons of seed dormancy.

18. What is leghemoglobin? Mention its function.

19. Write down the reactions through which pyruvic acid is converted to ethyl alcohol and CO_2 in alcoholic fermentation.

20. Write the expansion of RUBISCO. Mention its function.

21. Which symbol is used to denote water potential? How much is the water potential of pure water?

22. What is Emmerson enhancement effect?

(8 × 2 = 16 Marks)

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

23. Differentiate between hypotonic and hypertonic solutions. How the reaction of plant cells differs when immersed in these solutions?

24. 'Many of the xerophytic plants open their stomata only during night. Due to the lack of sunlight carbon fixation cannot be carried out at night.' Explain the pathway through which xerophytes tackled this issue.

25. List out the symptoms associated with the deficiency of any two micronutrients.

26. Define RQ. Explain how the RQ varies with different types of respiratory substrates.

27. Differentiate cohesion and adhesion. How these two interactions help in ascent of sap?

28. What are gibberellins? Elaborate on the major physiological roles of gibberellins in the life of a plant.

29. With the help of an example explain reductive-amination.

30. What is allosteric inhibition of enzymes? Give an example.

31. Write an account on the classification of ezymes.

(6 × 4 = 24 Marks)

IV. Write essays on **any two** of the following, Each carries **15** marks.

32. What are polypeptides? How the monomers are connected to form polypeptides? Add a note on the different levels of protein structure.

33. What is terminal respiratory pathway? Explain how the coordinated action of the different components of the pathway helps in the formation of ATP.

34. Elaborate on the non-cyclic electron transport and consequent phosphorylation in green plants. How it differs from cyclic electron transport.

35. Describe the mechanism of mineral absorption by roots.

(2 × 15 = 30 Marks)

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