

2026

6th Semester Examination (CCFUP : NEP)

BOTANY

Paper : MJ 11-T

(Single Core Major)

[Plant Physiology and Metabolism]

Full Marks : 40

Time : Two Hours

The figures in the margin indicate full marks.

*Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

Answer any *five* questions : $2 \times 5 = 10$

1. What do you mean by guttation?
2. What is co-transport? Give a suitable example. 1+1
3. Give examples of two plants where you can observe C4 pathway.
4. What do you mean by anaplerotic reaction?
5. What is uncoupler? Give two examples. 1+1

P.T.O.



(2)

6. Name two non-plastidial water-soluble pigments of plants.

7. What do you mean by Richmond-Lang effect?

8. What is vernalization?

Group - B

Answer any *four* questions : $5 \times 4 = 20$

9. With suitable diagram, demonstrate the signal transduction pathway of GA-mediated α -amylase synthesis in aleurone layer of cereal seeds. 5

10. What are the criteria for essentiality of elements? Discuss the pressure flow model in phloem translocation. 2+3

11. What is CAM? Schematically describe the process of photorespiration. 2+3

12. What is the significance of NADH shuttle system? Mention the different types of NADH shuttle system. What do you mean by cyanide-resistant respiration? 2+1+2

13. Write the name of one natural cytokinin available in plants. Briefly describe the physiological roles of Auxin and Ethylene. 1+2+2

14. Differentiate between symplastic and apoplastic pathway. Briefly describe the mechanism of stomatal movement. 2+3

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Group - C

Answer any *one* question : $10 \times 1 = 10$

15. Why Krebs cycle is called TCA cycle? Give a schematic diagram of Krebs cycle with enzymes. What is substrate level phosphorylation? Which co-factors are involved in oxidative decarboxylation of pyruvate? 2+4+2+2

16. Describe the process of root nodule formation (nodulation) in legumes. Describe the biochemistry of nitrogen fixation, with special reference to the role of the nitrogenase enzyme complex. What are nif genes? 4+4+2

