

October 2025
B.A./B.Sc.
Fifth Semester
CORE – 12
BOTANY
Course Code: BOC 5.21
(Plant Physiology)

Total Mark: 70

Pass Mark: 28

Time: 3 hours

Answer five questions, taking one from each unit.

UNIT-I

1. Discuss the components of water potential. Explain the process of water absorption by plant roots. 9+5=14
2. What is transpiration? What are the different forms of transpiration? Discuss any five factors affecting transpiration. 1+3+10=14

UNIT-II

3. What are chelates and their function? Using appropriate labelled diagram, explain the strategies used by plants for the uptake of iron using chelating agents. How do soil pH influence iron uptake by plants? 4+8+2=14
4. What is the difference between essential and beneficial nutrients? Explain the role of any four macronutrients. 2+12=14

UNIT-III

5. Explain in detail the phenomenon of active transport by using sodium-potassium pump as an example. Add a short note on secondary active transport. 8+6=14
6. With the help of a neatly labelled diagram, explain the process of phloem loading. Write in brief the pressure flow hypothesis. In relation to the source-sink concept, explain how plants do assimilate partitioning during reproductive and vegetative phase. 7+3+4=14

UNIT-IV

7. Write about the discovery of auxins. Name two natural and synthetic auxins. Explain the physiological role of auxins in plants. $3+2+9=14$
8. Why is abscisic acid known as the stress hormone? Discuss the effects of abscisic acid in plants. Write briefly about the chemical nature of abscisic acid. $3+8+3=14$

UNIT-V

9. Discuss the role of cryptochromes and phytochromes in the photomorphogenesis of plants. $7+7=14$
10. Write a note on each of the following: $7 \times 2 = 14$
- (a) Vernalization
 - (b) Seed dormancy
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