



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 5th Semester Examination, 2023-24



BOTACOR12T-BOTANY (CC12)

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.*

1. Answer **all** questions briefly from the following: 1×6 = 6
 - (a) What is facilitated diffusion?
 - (b) What are brassinosteroids?
 - (c) Why water potential of biological systems is usually expressed as a negative quantity?
 - (d) What is the chemical nature of p-protein?
 - (e) Give an example of auxin as herbicide.
 - (f) What is 'embolism' in plant system?

2. Answer any **eight** questions from the following: 3×8 = 24
 - (a) What are the criteria for essentiality of mineral elements? Mention the significance of 'Phosphorus' in plant nutrition. 1+2
 - (b) Differentiate between climacteric and non-climacteric fruits with examples.
 - (c) Discuss the role of Jasmonic acid in plant defence mechanism.
 - (d) *Xanthium* is a SD plant and *Hyoscyamus* is a LD plant, but both will flower in 14 hours light and 10 hours of dark. State the reason behind this.
 - (e) Explain the role of auxin in cell elongation.
 - (f) What is ion flux? Briefly discuss the proton ATPase pump. 1+2
 - (g) Discuss uniport, symport and antiport in relation to nutrient uptake.
 - (h) Discuss the factors affecting seed germination.
 - (i) There are two adjacent living cells, A and B. Cell A has an osmotic potential (ψ_s) of -7 bars and pressure potential (ψ_p) of 4 bars. Cell B has an osmotic potential of -8 bars and pressure potential of 3 bars. What will be the direction of water flow in the cells? Explain with reasons.
 - (j) Differentiate between Na^+ / K^+ pump and Ca^+ ATPase pump.
 - (k) What is the chemical nature of p-protein?
 - (l) Ethylene receptor acts as negative regulator. Explain.

3. Answer any *two* questions from the following:

5×2 = 10

- ✓ (a) Distinguish between transpiration and guttation. How does the potassium (K^+) ion help in the opening and closing of stomata? 2+3
- ✗ (b) Give the chemical structure of phytochrome. Differentiate between P_r and P_{fr} . What is photoperiodic induction? 3+1+1
- (c) Discuss briefly the ABP1 mediated molecular mechanism of auxin action in plants. Give the chemical structure of a synthetic auxin. $3\frac{1}{2}+1\frac{1}{2}$
- (d) Schematically represent the molecular events associated with GA induced α -amylase secretion by aleurone layer.

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