(c) What are phytosiderophores? Discuss their role in nutrient uptake. (5)

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1040

Unique Paper Code : 32161502

Name of the Paper : Plant Physiology

Name of the Course : **B.Sc. (H) Botany Part III**

Semester : V

Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **five questions** in all. Answer all parts of a question together.
3. **Question Number 1** is compulsory.
4. Draw well-labeled diagrams wherever necessary.

1. (a) Match the following:

(i) Jasmonate	(a) Secondary metabolite
(ii) Zeatin	(b) Chelating agent
(iii) Antiauxin	(c) ABA
(iv) Antitranspirant	(d) TIBA
(v) EDTA	(e) Cytokinin (1×5=5)

(b) Give one word for the following:

(i) The technique of growing plants in aqueous (nutrient) culture-

(c) Discuss the discovery and the physiological role of Abscisic acid. (5)

6. (a) Explain the CO-FT model of flowering with suitable diagram. (5)

(b) Describe the criteria of essentiality of an element. (5)

(c) How does water form a continuous column from the root to the tree canopy? What happens if the column breaks? (5)

7. (a) Discuss the role of Gibberellic Acid in inducing seed germination in cereals. (5)

(b) How does long-distance translocation in phloem take place? Explain. (5)

P.T.O.

(iii) Transpiration and guttation

(iv) Active absorption and passive absorption

(v) Macro and micronutrients

(vi) Simple and facilitated diffusion (5×3=15)

5. (a) Define the different component of water potential and how are these correlated. (5)

(b) Critically comment on the role of phytohormones in **any two** of the following:

(i) Apical dominance

(ii) Bolting

(iii) Abscission (5)

(ii) Pulling away of plasma membrane from the cell wall in a hypertonic solution-

(iii) Yellowing of leaves due to lack of chlorophyll-

(iv) Channels in the cell membrane for the passage of water-

(v) A gaseous hormone- (1×5=5)

(c) Give reasons for the following:

(i) Addition of solute in water decreases its water potential.

(ii) Germination in lettuce seed is promoted by red light.

P.T.O.

(iii) Some seeds germinate only when they pass through the gut of an animal.

(iv) Removal of growing apex from the main axis results in faster growth of lateral branches.

(v) Leaf discs incubated in cytokinin solution remain green. (1×5=5)

2. (a) What is photoperiodism? How are plants classified on the basis of their photoperiodic responses? (5)

(b) Transpiration is a necessary evil. Comment. (5)

(c) Discuss the mechanism of stomatal opening and closing with a suitable diagram. (5)

3. Write short notes on the following **(Any three)**

(i) Brassinosteroids

(ii) Mycorrhizae

(iii) Commercial applications of auxins

(iv) Vernalization

(v) Root pressure (5×3=15)

4. Differentiate between the following **(Any five)**

(i) Antiport and symport

(ii) Low fluence response (LFRs) and High irradiance responses (HIR)