

Serial No. : 5289
Unique Paper Code : 2164001202
Name of the Paper : Intelligent Systems in Plants
Name of the Course : Common Prog. Group -GE
Semester : II/IV/VI/VIII

Duration: 2 hours

Maximum Marks: 60 Marks

Instructions for Candidates

1. Write your **Roll No.** on the top immediately on receipt of this question paper.
2. Attempt **FOUR** questions in all, including **Question No.1 which is compulsory.**
3. **All** questions carry equal marks.
4. **All** parts of a question must be answered together.

1. (a) Name the following (**any five**) (5×1 =5)

- (i) Pollination by ants is known as
- (ii) A rooting hormone in plants
- (iii) Structures for gaseous exchange in plants
- (iv) Pigment responsible for the perception of blue light
- (v) Nutrient that acts as a second messenger in the cell
- (vi) A gaseous hormone in plants

- (b) Fill in the blanks (**any five**) (5×1 =5)

- (i) Bulliform cells are present in leaves of _____ plants.
- (ii) Sunken stomata are present in _____ plants.
- (iii) The pitcher of *Nepenthes* is a modified _____.
- (iv) Seed dispersal helps reduce _____ among seedlings for resources.
- (v) Sclerenchymatous hypodermis is an adaptive feature of _____ plants.
- (vi) _____ demonstrated the role of hormone in coleoptile tip curvature.

- (c) Define the following (**any five**) (5×1 =5)

- (i) ROS
- (ii) Gravitropism
- (iii) SAM
- (iv) Trichome
- (v) Thermogenic plants
- (vi) Hormones

2. Write a short note on the following **(any three)** (3×5 =15)
- (a) Seed dispersal mechanisms in plants
 - (b) Plant memory
 - (c) Historical perspective of intelligence in plants
 - (d) Plant adaptive intelligence
3. Differentiate between the following **(any five)** (5×3 =15)
- (a) Hydrophytes and Xerophytes
 - (b) Dicot and monocot leaf
 - (c) Shoot apical meristem and root apical meristem
 - (d) Endomycorrhiza and ectomycorrhiza
 - (e) Incipient plasmolysis and Plasmolysed cell
 - (f) Phototropism and Geotropism
4. (a) What is Phytochrome? Explain its role in controlling key physiological responses in plants. (5)
- (b) Write mechanical and chemical defense strategies against predators employed by plants. (5)
- (c) What is metabolic redundancy? Write its significance in plants. (5)
5. (a) Explain mode of nutrition in parasitic plants with suitable examples. (5)
- (b) Explain various types of tropic movements employed by plants. (5)
- (c) What are VOC's? Give example of any two VOC's. Explain their role as a mechanism of plant defence. (5)
6. (a) Describe the different signaling molecules used by plants in response to external stimuli? (5)
- (b) Define the rhizosphere and explain its structural zones and agricultural significance. (5)
- (c) Describe the role of light in seed germination. (5)