

Serial No. : 5022
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) Expand the following (**any five**) (5×1 =5)

- (i) ROS
- (ii) SAM
- (iii) AMF
- (iv) VOC
- (v) ABA
- (vi) HSP

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

- (i) Hydrophytes possess large _____ spaces that provide buoyancy.
- (ii) Bacteria that promote plant growth in the rhizosphere are called _____.
- (iii) _____ are the special cells found in monocot leaves and involved in leaf movement.
- (iv) _____ plant is an obligate root parasite.
- (v) ATPase pumps are involved in _____ transport across the membrane.
- (vi) The protective structure covering the root apex is known as _____.

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

- (i) Receptors
- (ii) Anemophily
- (iii) Plasmodesmata
- (iv) Metabolic redundancy
- (v) Root cap
- (vi) Hormones

2. Write a short note on the following (**any three**) (3×5=15)
- (a) Seed germination and factors effecting seed germination in plants
 - (b) Secondary metabolites
 - (c) Adaptive intelligence in carnivorous plants
 - (d) Cell to cell communication
3. Differentiate between the following (**any five**) (5×3=15)
- (a) Xylem and Phloem
 - (b) Osmosis and Imbibition
 - (c) Cold and heat stress
 - (d) Collenchyma and Sclerenchyma
 - (e) Hydrophyte and Xerophyte
 - (f) Carnivorous and parasitic plants
4. (a) How do plants recognize their neighbors and relatives? (5)
- (b) Explain how the concept of plant memory has evolved over time. Include early skepticism and recent experimental approaches. (5)
- (c) Enumerate and explain the various tropic movements in plants. (5)
5. (a) What are the mechanical and chemical defenses exhibited by plants against predators? (5)
- (b) Describe the various strategies of pollination and seed dispersal in plants, citing relevant examples. (5)
- (c) Explain the role of phytochrome in plant growth and development. (5)
6. (a) What are mycorrhizae? Explain the significance and dynamics of this relationship from the perspective of plant intelligence. (5)
- (b) What is ROS. Explain their detrimental effect on plant growth and development. (5)
- (c) Explain how the plants balance the dynamics of allocation of food between Source and sink. (5)