

(This question paper contains 2 printed pages.)

Your Roll No.....

Sr. No. of Question Paper : 13601

Unique Paper Code : 2164001202

Name of the Paper : Intelligent systems in plants

Name of Course : Botany (GE)

Semester : VII

Duration: 2 Hours

Maximum Marks: 60

Instructions for Candidates

- a) Write your Roll No. on the top immediately on receipt of this question paper.
- b) Attempt any *four* questions in all, **Question no. 1 is compulsory.**
- c) Attempt *All* parts of a question together.
- d) Draw diagrams where ever necessary.

1. (a) Match the following

1x5=5

- | | |
|--------------------------|--|
| i. Heliotropism | a. Transport of sugar and amino acids |
| ii. Phytochrome | b. Starch-statolith hypothesis |
| iii. Phloem | c. Plant response to track sunlight |
| iv. Haberlandt and Němec | d. Transport of water and minerals |
| v. Xylem | e. Red and far-red light photoreceptor |

(b) State whether the following statements are **True** or **False**

1x5=5

- i. Gruenberg documented habituation for the first time.
- ii. Hydrochasy is a movement in response to uptake of water.
- iii. Far-red light inhibits seed germination.
- iv. Pulvinus mediates thigmotropic response in plants.
- v. Bulliform cells are present in stem of grasses.

(c) Give one example of each of the following

1x5=5

- i. Plant exhibiting hydrochory
- ii. Plant pollinated by birds
- iii. Long-day plant
- iv. Plant showing positive heliotropism
- v. Part of the plant showing negative geotropism

2. Differentiate between **any three** of the following

3x5=15

- a. Monocot leaf and Dicot leaf
- b. Antiport and Symport
- c. Long day and short-day plants
- d. Hydrophytes and Xerophytes
- e. Salt stress and Cold stress

3. Write short notes on **any three** of the following

3x5=15

- a. Compartmentalization
- b. Role of plasmodesmata in cell-to-cell signaling
- c. Mechanical and chemical defense against predators
- d. Liberation movements
- e. Tropic movements

4. (a) Describe the role of plant hormones in life cycle signaling in response to external stimuli?

3x5=15

(b) Explain the significance of habituation learning in plants.

(c) Describe the concept of plant intelligence and memory with a historical perspective.

5. (a) Describe the process of short and long-distance transport of water and food in plants?

(b) Briefly describe the unique mechanisms of pollination found in plants.

(c) What is metabolic redundancy? Highlight its significance in plants.

3x5=15

(100)