12/12/19 AM

[This question paper contains 6 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7387 J

Unique Paper Code : 32161502

Name of the Paper : Plant Physiology

Name of the Course : **B.Sc. (Hons.) Botany**

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
3. Question No. **1** is compulsory.
4. Draw well-labelled diagrams wherever necessary.

1. (a) Give the term used for the following. Attempt any five. (5xl=5)

   (i) The transport mechanism in which two different solutes are moved across the membrane simultaneously.

   (ii) The loss of water in the form of vapours from the aerial parts of the plant.

P.T.O.

(iii) The requirement of cold temperature for fiowering.

(iv) Dark-grown seedlings.

(v) The continuous system of plant cell protoplasts interconnected by plasmodesmata.

(vi) Gas bubble formation in the xylem.

(b) Write True or False against the following. Attempt any five. (5xl=5)

(i) The dissolved solutes in a cell contribute to the osmotic potential of the cell.

(ii) Magnesium is a micronutrient required by plants.

(iii) Gibberellins bring about bolting in rosette plants.

(iv) Channels require ATP to transport solutes across membranes.

(v) Brassinosteroids are recently discovered plant hormones.

(vi) Sucrose is the most abundant sugar in the phloem.

(c) Fill in the blanks. Attempt any five. (5xl=5)

(i) ..... is the fruit ripening hormone.

(ii) The water potential of pure water is..... .

(iii) The hard seed coat can be rendered permeable to water and oxygen by.....

(iv) ..... is referred to as the rooting hormone.

(v) The concept of forigen was put forth by..... .

(vi) Cytokinins delay ..... .

2. Write short notes on **any three** of the following. (3x5=l5)

(i) Root pressure

(ii) Cholodny-Went Hypothesis

(iii) Phloem loading

(iv) Role of ABA during embryogenesis

P.T.O.

3. Differentiate between the following. Attempt **any three.** (3x5=15)

(i) Passive transport and active transport

(ii) Long-day plants and day-neutral plants

(iii) Hydroponics and aeroponics

(iv) Macronutrients and micronutrients

4. Attempt **any three** of the following : (3×5=15)

(i) Discuss the mechanism of action of auxins.

(ii) Write an account on phytochrome and its significance.

(iii) Explain the effects of any two factors on transpiration.

(iv) Describe the Avena coleoptile curvature bioassay for auxins.

5. Answer **any three** of the following. (3x5=15)

(i) Write an account on aquaporins.

(ii) What are mycorrhizae? Explain the role of mycorrhizae in nutrient uptake.

(iii) Discuss stomatal movements in the light of Proton Transport Theory.

(iv) Describe Munich's Mass Flow Hypothesis.

6. Attempt any three of the following. (3x5=15)

(i) Using a suitable diagram explain how water moves from the soil to the root up to the xylem.

(ii) Write an account on jasmonic acid.

(iii) Discuss the ABC model of flowering.

(iv) Discuss the role of Gibberellic Acid in induction of α-amylase activity in cereal grains.

7. Give brief answers to **any five** of the following. (5x3=15)

(i) What is meant by Triple Response in the context of ethylene?

(ii) Give one important function each of Ca, S and K.

(iii) Why are cytokinins called cell cycle regulators?

(iv) Explain why chelating agents are used in the nutrient media.

(v) What are ringing/girdling experiments? What is their significance?

(vi) Explain the effect of blue light on the stomatal movements.