This question paper contains **4+1** printed pages]

Roll No. | | | | | | | | | | |

S. No. of Question Paper : **5957**

Unique Paper Code : **216503** **D**

Name of the Paper : **Plant Physiology (BTHT 508)**

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

Semester : **V**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *Five* questions in all. Question No. **1** is compulsory.

All questions carry equal marks.

1. (*a*) Name the following : 1×5=5

(*i*) The hormone discovered from the rice field.

(*ii*) One photoreceptor associated with blue light responses.

(*iii*) A hormone that delays senescence.

(*iv*) Scientists who discovered photoperiodism.

(*v*) A selective weed killer.

P.T.O.

(*b*) Give contribution of the following : 1×5=5

(*i*) Loftfield, J.V.G.

(*ii*) Skoog, F. and Miller, C.O.

(*iii*) Chailakhyan, M.K.

(*iv*) Dixon, H.H. and Jolly, J.

(*v*) Levitt, J.

(*c*) Give *one* word for the following : 1×5=5

(*i*) The occurrence of break in the continuity of water column in the xylem is known as .....

(*ii*) The movement of water or solutes from cell to cell through cytoplasm with the help of plasmodesmata is called .....

(*iii*) Channels present in membranes which facilitate transport of water are called .....

(*iv*) Regulatory protein which functions after binding to calcium is called .....

(*v*) ..... is an antitranspirant.

2. Attempt the following : 5×3=15

(*a*) What is organic translocation ? What are its salient features ?

(*b*) What is ascent of sap ? Discuss the most acceptable theory for ascent of sap.

(*c*) Discuss the mechanism of mineral absorption in the light of cytochrome pump hypothesis.

Or

What is senescence ? Describe role of cytokinins in delaying senescence.

3. Attempt the following : 3×5=15

(*a*) Discuss the mechanism of opening and closing of stomata. In what way K^+ ions are involved in this process ?

(*b*) What are physiological and biochemical changes associated with fruit ripening ?

Or

Name any *two* recently discovered plant hormones and give their importance.

(*c*) Discuss the essentiality of mineral nutrition in plants.

4. (*a*) What is a bioassay ? Describe Went's *Avena* curvature bioassay test for auxins. 5

(*b*) Describe the hormonal involvement in nutrient mobilization in germinating cereal grains. 5

(*c*) Write short notes on any *two* : 2½×2=5

(*i*) Role of Antigibberellins;

(*ii*) Vernalization;

(*iii*) Role of cytokinins in morphogenesis;

(*iv*) Ethylene as a plant hormone.

5. (*a*) Discuss the factors which affect transpiration. 5

(*b*) Explain the different abiotic stresses in plants. How do the plants defend against these stresses ? 10

6. Discuss briefly any *three* of the following : 3×5=15

(*a*) Describe the chemical nature and mode of action of phytochrome.

(*b*) Plants actually measure the length of dark period in a 24 hr. cycle for the initiation of flowering. Describe with reference to either a SDP or LDP.

(c) Discuss the three types of phytochrome mediated response on the basis of their energy requirements.

Or

Discuss the discovery of auxins.

7. Distinguish between the following (any *five*) : 5×3=15

(a) Apoplast and Symplast;

(b) Hydroponics and Aeroponics;

(c) Osmosis and Imbibition;

(d) Active and Passive uptake;

(e) Transpiration and Guttation Yellowing of leaves in growing seedling is attributed to lack of magnesium ions;

(f) Succulents and Non-succulents;

(g) Inductive and non-inductive photoperiods.