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Your Roll No.

941

B.Sc. (Hons.)/III

C

BOTANY—Paper XI

(Plant Physiological Processes, Growth and Development)

(Admissions of 2004 and onwards)

Time : 3 Hours

Maximum Marks : 38

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

Attempt *Five* questions in all,

Question No. 1 is compulsory.

1. (a) Answer the following briefly (any six) : 6
- (i) Define homeostasis.
 - (ii) What are heat shock proteins ?
 - (iii) In what way does the concept of water potential help the plant physiologist to explain the water movement ?

P.T.O.

- (iv) What is aeroponics ?
 - (v) Give one commercial application of gibberellins in horticultural industry.
 - (vi) How does wind influence the rate of transpiration ?
 - (vii) Briefly mention the practical application of girdling in fruit bearing trees.
 - (viii) Mention any *one* physiological response caused by cytokinins.
- (b) Name the following : 4
- (i) A natural cytokinin.
 - (ii) A mineral responsible for osmoregulation.
 - (iii) One example each of climacteric and non-climacteric fruits.
 - (iv) A group of antimicrobial compounds synthesized in response to fungal infection.

2. (a) Explain the mechanism of stomatal opening and closing with special reference to starch-sugar hypothesis. 4
- (b) Describe the role of aphids in the study of phloem translocation. 3
3. (a) Distinguish between (any three) : 6
- (i) Stratification and Vernalization
 - (ii) Phototropism and Geotropism
 - (iii) Transpiration and Guttation
 - (iv) Seismonasty and Nyctinasty.
- (b) Explain the following : 1
- (i) TIBA
 - (ii) PCD.
4. Write explanatory notes on (any two) : 7
- (i) Biological clock

- (ii) Munch mass flow hypothesis
- (iii) ATPase-proton pump
- (iv) Salt stress.
5. (a) Differentiate between primary and secondary dormancy. Discuss the causes and significance of seed dormancy. 4
- (b) What are chelating agents ? Explain briefly their importance in plant nutrition. 3
6. List the bioassays used for auxins, gibberellins and cytokinins. Give a detailed account of physiological role and mode of action of auxins. 7
7. What do you understand by the phytochrome system ? Describe the physiological processes influenced by it and probable mechanism of its action. 7