

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 697

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Your Roll No.....

Unique Paper Code : 216503

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

Name of the Course : **B.Sc. (H) 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, including question No. 1 which is compulsory.
3. All parts of the question should be answered together.

1. (a) Name **any five** of the following : (1×5=5)

- (i) A synthetic auxin
- (ii) A phyto tropin
- (iii) A natural chelating agent
- (iv) A plant species carrying Selenium
- (v) A hormone causing Witches' broom in plants
- (vi) Metal present in chlorophyll molecule

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

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|----------------|---------------|
| (i) Cousins | (ii) Addicott |
| (iii) Kurosawa | (iv) Knop |
| (v) Stewards | (vi) Gericke |
| (vii) Paal | |

P.T.O.

(c) Expand **any four** of the following : (0.5×4=2)

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|-----------|----------|
| (i) IPA | (ii) CCC |
| (iii) AOA | (iv) PMA |
| (v) DCMU | (vi) DZ |

(d) Classify **any six** as LDP, SDP, DNP, LSDP, SLDP according to their photoperiodic response (0.5×6=3)

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|---------------------------|-------------------------------|
| (i) <i>Fuchsia</i> | (ii) <i>Secale cereale</i> |
| (iii) <i>Crysanthemum</i> | (iv) <i>Helianthus annuus</i> |
| (v) Tobacco | (vi) <i>Kalanchoe</i> |
| (vii) <i>Pisum</i> | (viii) Castor |
| (ix) <i>Iberis</i> | |

2. Write a detailed account on **any three** of the following : (5×3=15)

- (i) P-proteins
- (ii) Vernalization
- (iii) Jasmonates
- (iv) Florigen concept
- (v) Cytochrome pump theory

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

- (i) Carrier proteins and Channel proteins
- (ii) Transpiration and Guttation
- (iii) P-type ATPase and V-type ATPase
- (iv) Macronutrients and Micronutrients

- (v) Active salt absorption and Passive salt absorption
 - (vi) Water potential and DPD
 - (vii) Symport and Antiport
4. Explain **any three** of the following : (5×3=15)
- (i) ABA protects the plant against immediate dessication.
 - (ii) Etiolated seedlings are used for phytochrome studies.
 - (iii) Foliar application of mineral nutrients is preferred over direct use in soil
 - (iv) Micronutrients were discovered later than macronutrients.
 - (v) Transpiration is a necessary evil.
5. (a) Describe the various theories that explain the mechanism of opening and closing of stomata. (9)
- (b) What roles do the following minerals play in plant metabolism :
- (i) Nitrogen
 - (ii) Phosphorus
 - (iii) Iron (6)
6. (a) Give a brief account of discovery of auxin. (9)
- (b) How does gibberellin induce α -amylase synthesis in aleurone layer of cereals ? (6)
7. (a) Briefly describe the pathway of water across the root cells. (5)
- (b) Describe how cytokinin regulates the cell cycle. (5)

- (c) Discuss the factors that lead to the seed dormancy. (5)
8. (a) Explain the mechanism for source-sink transport of photo-assimilates in phloem. (9)
- (b) Describe the mode of action of phytochrome. (6)