

CS—87/06

BOTANY

Paper—II

Time—Three Hours

Full Marks—300

*Candidates should attempt Question No. 1 from Section-A and Question No. 5 from Section-B which are compulsory, and any **THREE** of the remaining questions, selecting at least **ONE** from each Section. All questions carry equal marks.*

SECTION—A

1. Write on any **THREE** of the following :— $20 \times 3 = 60$
 - (i) Apomixis
 - (ii) Chloroplast
 - (iii) B-Chromosomes
 - (iv) Transcriptional Enhancers.
2.
 - (i) Give an account of genetic code.
 - (ii) With suitable illustrations prove that genes are located on chromosomes.
 - (iii) How will you calculate distance between genes on chromosomes ? Illustrate your answer with suitable example. $20 \times 3 = 60$

3. (i) Give an account of signal transduction in Plants.
(ii) Briefly describe the procedure of pedigree method of breeding. Discuss the achievements in Indian Agriculture. $20 \times 3 = 60$
(iii) What are molecular markers ? Explain their uses in Crop Improvement.
4. (i) Explain the method of production and management of insect resistant transgenic crops.
(ii) Explain how *Agrobacterium tumefaciens* is used in genetic engineering.
(iii) Describe the Prophase-I of meiosis. $20 \times 3 = 60$

SECTION—B

5. Answer any **THREE** of the following in about 200 words each :— $20 \times 3 = 60$
- (a) What is water potential ? Discuss its various components.
- (b) Discuss the mechanism of ATP synthesis in the light of chemiosmotic hypothesis.
- (c) Describe the salt-stress tolerance mechanism in halophytes.
- (d) Write an account on phytoremediation.

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6. (a) Present a detailed account on noncyclic electron transport in photosynthesis. 30
- (b) Discuss the current views on mineral ion uptake by plants. 30
7. (a) What is Phytochrome ? Give a comprehensive account on its structure and mode of action. 30
- (b) Describe the physiological and biochemical changes accompanying the seed germination. 30
8. (a) How climatic factor influences plant distribution ? 20
- (b) What is RED data Book ? Write about IUCN-categories. 20
- (c) What are biogeochemical cycles ? Discuss the events in nitrogen cycle. 20