

BOTANY
(Paper II)

Time Allowed : Three Hours

Maximum Marks : 300

QUESTION PAPER SPECIFIC INSTRUCTIONS

(Please read each of the following instructions carefully before attempting questions)

There are EIGHT questions divided in two Sections.

Candidate has to attempt FIVE questions in all.

Question Nos. 1 and 5 are compulsory and out of the remaining, any THREE are to be attempted choosing at least ONE question from each Section.

The number of marks carried by a question/part is indicated against it.

Wherever any assumptions are made for answering a question, they must be clearly indicated.

Word limit in questions, wherever specified, should be adhered to.

SECTION 'A'

1. Write short notes on any three in about 200 words each: **20×3=60**
- (a) Organelle genomes
- (b) Tautomeric shifts and mutations
- (c) Bidirectional synthesis of DNA in E. Coli
- (d) Backcross method of breeding
2. (a) Distinguish between channels and carrier proteins and their roles in regulating membrane transport. **30**
- (b) Distinguish between Heterochromatin and Euchromatin. **30**
3. (a) Discuss the origin, production and uses of haploids. **30**
- (b) Describe biosafety regulatory measures for raising transgenic crops. **30**
4. (a)
- (a)(i) Comment briefly on the contributions made by Herman Nilsson-Ehle. **15**
- (a)(ii) List the important statistical methods of studying association and relationship between two variables. **15**
- (b) Give an account of the PCR based molecular markers and their applications in plant breeding. **30**

SECTION 'B'

5. Write short notes on any three in about 200 words each: **20×3=60**
- (a) Crassulacean Acid Metabolism
- (b) Stomatal movements
- (c) Hydrosere
- (d) Kyoto Protocol and CDM
6. (a) Describe the mitochondrial electron transport chain and theories for ATP synthesis. **30**
- (b) Describe vernalization and its role in flowering. **30**
7. Write short notes on the following in about 200 words each:

20×3=60

- (a) Leaf senescence
- (b) Physiological effects of ethylene in plants
- (c) Ecological pyramids

8. Describe C_4 pathway of CO_2 fixation. In what respects does it differ from the C_3 pathway? Mention the specialised anatomical features associated with C_4 photosynthesis. **60**