

BOTANY
(Paper II)

Time Allowed : Three Hours

Maximum Marks : 250

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.

Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

SECTION 'A'

1. Explain the following:— **10×5=50**
- (a) Mitochondria
 - (b) Extrinsic and Intrinsic proteins
 - (c) Genetic code
 - (d) Hybrid vigour
 - (e) Self-incompatibility.
2. (a) Distinguish between prokaryotic and eukaryotic cell. **15**
- (b) Discuss briefly the evidence of organic evolution. **15**
- (c) Describe briefly the various methods of gene transfer. **20**
3. (a) Describe the structure, behaviour and significance of special types of chromosomes. **15**
- (b) What is the role of RNA in the origin and evolution of living organisms? **20**
- (c) Describe the method of developing disease and insect resistant varieties through back cross method of breeding crop varieties. **15**
4. (a) Describe the numerical variation in chromosomes. **15**
- (b) What is the biochemical and molecular basis of mutations? **20**
- (c) Discuss briefly the mechanism of disease resistance. **15**

SECTION 'B'

5. Explain the following:— **10×5=50**
- (a) ATP synthase
 - (b) Senescence
 - (c) Conservation of biodiversity
 - (d) Species based mechanism of invasion
 - (e) Mainstream forms of renewable energy.

6.	(a)	Describe the process of biological nitrogen fixation with special emphasis on denitrogenase.	20
	(b)	Discuss the principal systems of environmental pollution and the reasons thereof.	15
	(c)	Describe different sub-mitochondrial complexes associated with electron transport chain of aerobic respiration.	15
7.	(a)	Enumerate the salient features of water relations in crop plants.	15
	(b)	What are the characteristics of phytochrome induced responses in flowering of higher plants? How do they control flowering?	15
	(c)	Distinguish between natural and social forests. Discuss in detail the various objectives of social forestry.	20
8.	(a)	Describe the mechanism of CO ₂ fixation in CAM plants.	15
	(b)	Describe any four principal phytogeographical regions of India.	15
	(c)	Discuss the various advantages and limitations of phytoremediation.	20