Civil Services (Main) Examination, 1999

# BOTANY
## (Paper II)

| **Time Allowed : Three Hours** | **Maximum Marks : 300** |
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**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.
All questions carry equal marks.
Wherever any assumptions are made for answering a question, they must be clearly indicated.
Word limit in questions, wherever specified, should be adhered to.

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## SECTION 'A'

**1.** Answer any three of the following. Each part should be answered in not more than 200 words

- **(a)** Cellular function of oncoproteins
- **(b)** Photochemical smog
- **(c)** Physiological role of essential elements in plants
- **(d)** Genetic basis of inbreeding depression and heterosis

**2.** How does mutation contribute to organic evolution? What modifications in mutation theory of Hugo de Vries were found necessary to reach the present state of our knowledge?

**3.** Distinguish between the following:

- **(a)** Linkage map and Linkage group
- **(b)** Physical xerophytes and Physiological xerophytes
- **(c)** Euchromatin and Heterochromatin
- **(d)** Photo-system-I and Photo-system-II

**4.** What is population? Discuss the genetic forces that disturb the genetic equilibrium and modify the gene frequencies in population.

## SECTION 'B'

**5.** Answer any three of the following. Each part should be answered in not more than 200 words: Discuss:

- **(a)** TCA-an amphibole pathway
- **(b)** Atmosphere is an essential life supporting system
- **(c)** An organism is a bundle of adaptation
- **(d)** Bio-fertilizers improve soil fertility

**6.** What is ‘Bioenergy’. Explain the energy cycle in the cells. What is the role of ATP in this cycle?

**7.** Write short notes on any three of the following

- **(a)** Ageing and senescence
- **(b)** Cell cycle

*English version compiled from published transcriptions and cross-checked across sources; not a facsimile of the official UPSC question paper.*



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**(c)** Neurospora for genetic research

**(d)** New genetic code

**8.** Listed below are a few economic plants. Briefly point out the morphology of useful part, economic products and uses

**(a)** Holarrhena antidysenterica

**(b)** Allium sativa

**(c)** Chrysanthemum cinerarifolium

**(d)** Pinus gerardiana

**(e)** Cannabis sativa



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