

IAS Mains Botany 1999

Paper-II

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 Varies 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. Euromatin and Heteromatin
 - 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

1. 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
2. What is 'Bioenergy' Explain the energy cycle in the cells. What is the role of ATP in this cycle?
3. Write short notes on any three of the following
 - a. Ageing and senescence
 - b. Cell cycle
 - c. Neurospora for genetic research
 - d. New genetic code
4. Listed below are a few economic plants. Briefly point out the morphology of useful part, economic products and uses

- b. *Allium sativa*
- c. *Chrysanthemum cinerarifolium*
- d. *Pinus genadiana*
- e. *Cannabis sativa*