

IAS Mains Botany 1993

Paper-II

Section A

1. Answer any three of the following in not more than 200 words for each part:
 - a. What are the criteria for distinguishing between autopolyploidy and allopolyploidy?
 - b. How does epistasis differ from dominance?
 - c. Histones act as gene repressors and hormones as gene activators. Explain.
 - d. Point out the differences between point mutation and chromosomal aberrations.
2. Answer the following questions
 - a. Explain the chromosome theory of inheritance.
 - b. How will you demonstrate that the genetic crossing over has a cytological basis?
3. With the help of suitable diagrams bring out the differences between meiotic and mitotic prophase.
4. Answer any two of the following:
 - a. What is hybrid vigour? Mention its utilization and achievements in plant breeding.
 - b. Genetic activity is not the sole monopoly of the nucleus. Explain.
 - c. What are the isolating mechanisms, which play a part in the evolution of plant species?

Section B

5. Answer any three of the following in not more than 200 words for each part.
 - a. Write on the metabolic pathway of aerobic respiration.
 - b. What do you understand by C₃, C₄ and CAM plants?
 - c. Describe the role of man as an ecological factor.
 - d. Discuss in short the regulation of protein synthesis.
6. Photosynthetic pigments are organized into two systems with different photochemical function. Comment.
7. Answer any two of the following:
 - a. Is the concept of Florigen purely hypothetical? Can it be homologous to Gibberellins?
 - b. Write on energy flow in ecosystem.
 - c. Describe in brief the biogeochemical cycle.
8. Answer the following questions
 - a. What is social forestry? What are its advantages?
 - b. What are herbicides? What is the effect of herbicides on seed germination, seed

c. Name the plants, their families and the parts of plant from which following is obtained:

- i. Indigo
- ii. Quinine
- iii. Nicotine
- iv. Saffron