

# IAS Mains Botany 1992

## Paper-II

### Section A

1. Answer any three of the following in not more than 200 words each part:
  - a. Describe the structure of thylakoid membrane in relation to its function.
  - b. What are the principal chromosomal aberrations and how do they alter genetic ratios?
  - c. Give briefly essential features of the development of gene concept.
  - d. Discuss in short role of mutations in evolution.
2. Answer the following questions
  - a. What is sex-linked inheritance? Explain with suitable examples.
  - b. Discuss various methods employed in gene mapping.
3. How does gene recombination take place in population? Explain genetic drift give basic principles of population genetics.
4. Answer any two of the following:
  - a. Write major objectives for plant breeding. Discuss the techniques of breeding used for plant improvement.
  - b. What are his tones? Examine their role as genetic repressors in the light of modern knowledge.
  - c. Critically evaluate the principal mechanism of organic evolution.

### Section B

5. Answer any three of the following in not more than 200 words for each part:
  - a. What is oxidative pentose phosphate pathway? What is its role in plant metabolism?
  - b. Mention of causes of seed dormancy. Give the methods breaking the dormancy.
  - c. What is SPAC concept? Discuss the importance of this notion in plant water relations.
  - d. Present a brief account of the process of nitrate reduction in plants.
6. How is the CO<sub>2</sub> concentrating mechanism during photosynthesis achieved in certain plants? Explain in detail this pathway and its superiority over the C<sub>3</sub> photosynthesis.
7. Answer any two of the following:
  - a. What is plant succession? Discuss the process in relation to water factor.
  - b. Describe the various types of forest met within India.
  - c. Classify growth movements. Briefly mention the hormonal control of tropic movements in plants.
8. Answer the following questions

- a. Write a short account of the need and technique of a forestation programme.
- b. Mention the complete botanical names of plants yielding the following products, their families, the morphology of the part of economic importance and the uses in each case
  - i. Cashew
  - ii. Ginseng
  - iii. Til
  - iv. Sugarcane
- c. Describe the role of biotic factors in the determination of plant communities.