

IAS Mains Botany 1997

Paper-II

Section A

1. Answer any three of the following. Each part should be answered in not more than 200 words:
 - a. What is the role of Golgi complex in a cell? Describe how Golgi complex is structurally and functionally interconnected with endoplasmic reticulum.
 - b. Why was Mendel fortunate in his choice of the pea plant as the experimental material? Why are Mendel's laws important?
 - c. The C₃ cycle and C₄ cycle are temporally separated in CAM plants, whereas they are spatially separated in C₄ plants. Explain.
 - d. Give the botanical name, family, cultivation and processing of any beverage plant you have studied.
2. Discuss the operon concept of gene action.
3. Answer the following questions
 - a. Write an account of polyploidy and its role in evolution.
 - b. Discuss the chemical organization of a chromosome:
4. Answer the following questions
 - a. Write short notes on any four of the following:
 - i. Chemical mutagens
 - ii. Downs syndrome
 - iii. Seed dormancy
 - iv. Active and passive uptake of ions
 - v. Shifting cultivation
 - b. Forests are an important natural resource and need to be conserved. Discuss.

Section B

5. Answer any three of the following. Each part should be answered in not more than 200 words:
 - a. Write a short account of photoperiodism in plants.
 - b. Discuss the dynamics of translocation of organic substances.
 - c. Name the various phytogeographical zones of India and give two examples of characteristic plants from each region.
 - d. How is the centre of origin of cultivated plants determined? Discuss the importance of such a study in relation to improvement of crop plants.

6. Describe the process of rhizobial infection and nodule development in a legume root. What is the function of leghaemoglobin in symbiotic nitrogen fixation?

7. Answer the following questions

a. Define succession and explain with the help of a suitable example.

b. Write a note on ecosystem under the following heads.

i. Components

ii. Energy flow

iii. Nutrient movement

8. Answer the following questions

a. Mention any three timber-yielding plants of India. Give the botanical names, their respective families and distribution. Add a note on seasoning of wood

b. With suitable example enumerate the chief characteristics and importance of the following

i. Essential oils

ii. Fatty oils