

IAS Mains Botany 1994

Paper-I

Section A

1. Answer any three of the following in not more than 200 words each:
 - a. Which features does Anthoceros share with Pteridophytes?
 - b. Explain the mechanism of a symbiotic nitrogen fixation.
 - c. What are the criteria that must be met to prove that an organism is a pathogen?
 - d. Examine the salient features of microphylls and megaphylls.
2. Write about the causal organism, symptoms and methods of control of any four of the following plant diseases:
 - a. Koleroga of Coffee
 - b. Black rot of Cabbage
 - c. Powdery mildew of Wheat
 - d. Sheath blight of Rice
 - e. Bud rot of Coconut
3. Answer the following questions
 - a. Write an account on vegetative propagation in hepaticae.
 - b. Give an account of life-cycles in Rhodophyceae.
 - c. Explain the sporangia types in ferns based on the order of development of Sporangia. What is phyletic slide?
4. Answer the following questions
 - a. Discuss the morphological nature of the rhizophore in Selaginella.
 - b. Describe the mechanism of conjugation in bacteria.
 - c. Write explanatory notes on the following:
 - i. Sex chromosomes in Bryophytes
 - ii. Heterocyst
 - iii. Elaters
 - iv. Male flower of Gnetum

Section B

5. Answer any three of the following in not more than 200 words each:
 - a. Magnoliales possess evolutionarily primitive flower. Substantiate.
 - b. Indicate the role of anatomy in angiosperm systematic.

d. What are mangroves? How do they adapt to the habitat?

6. Answer the following questions

- a. Write an account on the secondary growth in lianas
- b. Explain the applications of micropropagation.
- c. Comment on the following:
 - i. Phloem in gymnosperms and angiosperms.
 - ii. Male gametophyte in Cycas, Pinus and angiosperms

7. Answer the following questions

- a. What is periderm? Explain its development in monocotyledons.
- b. Write an account on the importance of Karyotype in taxonomy.
- c. Distinguish between:
 - i. Alpha taxonomy and omega taxonomy
 - ii. Homocellular and heterocellular rays
 - iii. Polygonum and Oenothera types of embryo sac
- d. Give an account of adventive embryonic.

8. Answer the following questions

- a. Give the floral formula and draw the floral diagram of a diandrous orchid.
- b. What is stomatal apparatus? Explain the different stomata types.
- c. Write explanatory notes on any three of the following:
 - i. Dichogamy
 - ii. Sycosis
 - iii. Vesselless angiosperms
 - iv. Amphivasal vascular bundle
- d. Name the source and economic importance of any three of the following:
 - i. Asafoetida
 - ii. Senna
 - iii. Haematoxylin
 - iv. Sal
 - v. Manila hemp