

IAS Mains Botany 1998

Paper-I

Section A

1. Answer any three of the following in not more than 200 words each:
 - a. Bryophytes function as indicator plants and as element indicators. Justify.
 - b. Why is *Dryopteris* called walking fern? Why are *Azolla* and *Marsilea* lumped with other ferns in the order Filicales?
 - c. What are extremophylls? Why are they getting lot of attention now?
 - d. Despite their similarities with other bacteria, Cyanophyceae share several morphological, biochemical and biological characters with Rhodophyceae. Enumerate these characters and discuss the significance of this similarity.
2. Sexual reproduction in *Cystopus* as well as *Vaucheria* is oogamous, yet there are differences in detail. With brief description and appropriate diagrams bring out the differences and also comment upon the mode of nutrition of the two thallophytes.
3. Distinguish between
 - a. White rust and Black rust
 - b. Downy mildews and Powdery mildews
 - c. Root-knot and Root-rot disease
 - d. Late blight and Early blight of potato
4. Answer the following questions
 - a. Explain why Anthocerotae is considered a synthetic group.
 - b. Explain, by referring to anatomy of stem, morphology of reproductive parts and biology of reproduction of *Gnetum*, why this gymnosperm is considered advanced.

Section B

5. Attempt any three of the following in not more than 200 words each
 - a. Explain the difference between somatic embryos and sexual embryos
 - b. What are subterranean flowers? Name some plants which carry such flowers. What can be the possible advantages and disadvantages of such flowers?
 - c. Describe the structure and function of medullary rays.
 - d. With the help of labelled diagram describe the peculiarity in the anatomy of *Dracaena* stem.
6. Discuss the role of systematic and biosystematics in biodiversity inventorisation. Describe the parameters which are employed for estimation of biodiversity.
7. Answer the following questions
 - a. Describe the phenomenon of pollen-stigma interaction.

- b. Write brief account on in vitro fertilization.
- c. Describe the procedure of intro-ovarian pollination.

8. Answer the following questions

- a. By referring to specific examples discuss the role anatomy can play in taxonomy.
- b. Give specific differences between:
 - i. Spring wood and Autumn wood
 - ii. Cystoliths and Raphides
 - iii. Tectum and Tapetum
 - iv. Abscission and Wound healing