

IAS Mains Botany 1999

Paper-I

Section A

1. Answer any three of the following in not more than 200 words each
 - a. What is mycoplasma? How does it differ from a fungus? Describe the important mycoplasma diseases of plants and their methods of control.
 - b. Write an account of different types of steles found in pteridophytes with the help of suitable diagrams. Arrange these steles in an evolutionary sequence.
 - c. With the help of suitable diagrams describe in detail the reproductive organs found in *Batrachospermum*. Comment on the life cycle. How does the life cycle of *Batrachospermum* differ from that of *Polysiphonia*?
 - d. Differentiate between the spore bearing organs of *Anthoceros* and *Polytrichum*. Draw neat labelled diagrams.
2. Classification of the class. Phaeophyceae is based on various kinds of life cycles. Discuss. Make graphic representation of all types of life cycles.
3. Answer the following questions
 - a. Write an account of the role of microbes in environmental pollution management programmes.
 - b. With the help of diagrams only describe the life history of *Puccinia*
4. Distinguish between the following pairs giving suitable labelled diagrams: (any three)
 - a. *Carpogonium* and *Archegonium*
 - b. External morphology of *Psilotum* and *Equisetum*
 - c. *Desmids* and *Diatoms*
 - d. *Liverworts* and *Mosses*.

Section B

5. Answer any three of the following in not more than 200 words each:
 - a. Describe the anomalous secondary growth in three dicot stems. Draw labelled diagrams in each case.
 - b. Give the methodology and applications of tissue culture technique.
 - c. Describe the major stomatal types in plants.
 - d. Describe the anatomy of root stem transition region with the help of suitable diagrams only.
6. Write an account of the floral structure of the following families
 - i. *Euphorbiaceae*
 - ii. *Rubiaceae*

iii. Orchidaceae

Give botanical names of three important plant species belonging to each of the three families.

Specify why these are important.

7. Give an account of the vegetative anatomy of *Cycas* with the help of diagrams . Enumerate important differences in the anatomical features of *Cycas* and *Gnetum* (only vegetative features).
8. Answer the following questions
 - a. What is polynology? Describe the basic and applied importance of this science.
 - b. Enumerate various types of angiospermic embryo sacs in a tabular form.