

IAS Mains Botany 1990

Paper-I

Section A

1. Answer any three of the following question. Answer to parts (b) (c), and (d) should not exceed 200 words for each:

a. Write briefly about the following:

- i. A vascular land plant more primitive than rhynia
- ii. A plant disease beneficial to man
- iii. An edible alga grown commercially by sea-farming
- iv. A bacterium commercially exploited for antibacterial drug production.
- v. A carnivores fungus.

b. Distinguish between 'virus' and 'viroids' with suitable examples.

c. What are monoclonal antibodies? How are they produced? Mention their importance.

d. What are Target-specific fungicides? Name three such fungicides and mention their modes of action.

2. Answer the following questions

a. Comment on any two of the following:

- i. Generalized and specific transduction
- ii. Evidence of role of pectin hydrolase's and transeliminases in plant disease development
- iii. Post-infectional biochemical defence mechanism in plants.

b. Name the causal agent, primary inoculum and its source, two characteristic symptom expressions, secondary inoculum and specific control measures used by the farmers for the following plant diseases:

- i. Downy mildew of Bajra
- ii. Rust of Coffee
- iii. Bacterial wilt of Potato
- iv. Sandal spike
- v. Ear-cockle of Wheat.

3. Answer the following questions

a. Describe the morphology and anatomy of the corn of Isoetes. Trace the origin of the taxon from arborescent lycopods.

b. Describe the sporophyte morphology of Azolla with special reference to its argonomic use as a bio-fertilizer.

4. Answer the following questions

a. Comment on any Three of the following:

- i. Triphasic life-cycle in algae
- ii. Ballistospores and mechanism of their discharge
- iii. Differences between sexual and parasexual recombination
- iv. Similarities and dissimilarities between photo-synthetic systems of blue-green and green algae

b. Attempt any two to the following:

- i. State the distinguishing features of saprophytes of Sphagnidae, Andreacidae, and Bryidae with sketches and examples
- ii. Control of oil pollution of sea-water by microbes
- iii. Economic, medicinal and ecological importance's of bryophytes of man.

Section B

5. Answer any three of the following questions:

a. Write briefly about the following:

- i. An angiosperm with open carpel
- ii. A herbaceous gymnosperm
- iii. A saprophytic angiosperm
- iv. A dicotyledonous with C₄ pathway
- v. A monocot with secondary growth

b. Comment on the floral structure, relationships, and economic importance of Ephedra.

c. Distinguish between the cellular and helobial endosperm development with sketches and examples.

d. What are somatic hybrids? How are they produced? Mention their importance to manking with suitable examples.

6. Answer the following questions

a. Enumerate the families of Conferrals giving characteristic features, distribution and an Indian examples of each of them.

b. What is numerical taxonomy? Briefly state the methods employed in and importance of this taxonomy.

7. Answer the following questions

a. Answer any two of the following:

- i. Outline the salient features of the classification by Bentham and Hooker. What are the merits and demerits of this system?

iii. Importance of the study of photochemistry in taxonomy.

b. Answer the below questions

- i. State the distinguishing characters of Rosaceous and the affinities of the taxon with Ranunculaceae and Leguminosae. Mention five Indian fruit plants of the family.
- ii. Describe the shoot apex organization of angiosperms in the light of recent researches.

8. Answer the following questions

a. Place the following genera to their respective families and indicate their economic importance:

- i. Elaeis
- ii. Manihot
- iii. Arachis
- iv. Cephalaria
- v. Nigella

b. Distinguish between:

- i. Cereals and millets
- ii. Ornithophily and chiropterophily
- iii. Utricularia and Aldrovanda
- iv. Plasmodesmata and Ectodesmata
- v. Sorosis and Syconus.