

IAS Mains Botany 2002

Paper-I

Section-A

1. Answer any three of the following in not more than 200 words each: $20 \times 3 = 60$
 - a. Recent studies reveal that mesosomes are artifacts and not true structures. Discuss.
 - b. What is heterospory? Discuss seed habit in pteridophytes giving suitable examples.
 - c. Describe the ultra structure and role of heterocyst in blue-green algae.
 - d. Describe the economic importance of bryophytes giving suitable examples.
2. Answer the following questions
 - a. What are biosensors? Describe the applications of microbiology in industry.
 - b. What are mycorrhizae? Describe economic potential of mycorrhizal fungi in agriculture and forestry. $30 \times 2 = 60$
3. What is apogamy? Describe the structure and arrangement of sex organs in bryophytes with the help of suitable diagrams. 60
4. Answer the following questions
 - a. Differentiate between hybrids and cybrids. How are cybrids obtained?
 - b. What is callus? Describe the process of differentiation from callus. $30 \times 2 = 60$

Section-B

5. Answer any three of the following in not more than 200 words each: $20 \times 3 = 60$
 - a. What are progymnosperms? Describe with examples their morphology.
 - b. Differentiate between velamen and exodermises.
 - c. What is Kranz anatomy? Where do you find it? Describe its structure and importance.
 - d. Write an account on Shibpur Botanical Garden and Royal Botanic Gardens, Kew (England).
6. What is polyembryony? Describe the practical value of polyembryony. 60
7. Answer the following questions
 - a. What is palynology? Describe the applications of palynology.
 - b. Describe the origin of wheat, maize and rice. $30 \times 2 = 60$
8. Give salient features of flower of the following families. Give economic importance of three plants from each family $15 \times 4 = 60$
 - a. Ranunculaceae
 - b. Euphorbiaceae
 - c. Dipterocarpaceae

d. Orchidaceae