IAS Mains Botany Papers 1992

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Paper-I

Section A

1. Answer any three of the following in not more than 200 words each:
    a. How do eukaryote cells differ from prokaryote cells?
    b. Write about different types of pollutants.
    c. How has apomixes helped in evolution?
    d. Write about commensalisms with examples. How does differ from ammensalism?
    e. What are mycoherbicides? Explain with examples.
2. Give a concise account including control measures, of any four of the following:
    a. Red rot of sugarcane
    b. Green ear disease of Bajra
    c. Yello ear rot of wheat
    d. Bacterial blight of rice
    e. Yellow mosaic virus
3. Answer the following questions
    a. Give a short account of the moss protonema

b. List three most important characters from which Pteridophytes differ from the Bryophytes.

c. Why is Marselia sporocarp not considered a seed?

d. Why were Bryophytes not successful on land as the vascular plants?

4. Answer the following questions

a. How will you differentiate a long shoot from a dwarf shoot in pinus?

b. What characters are common to cycads and Fern?

c. Compare the mature embryo of Pinus with that of Cycas.

d. Tripharic life cycles in Algae. Discuss.

Section B

1. Answer any three of the following in not more than 200 words each:

a. How does serology help in taxonomy of plants?

b. Explain the significance of palynological characters in systematics.

c. What characters are used for identification of wood

d. Outline the scope, usefulness and limitations of Chemotaxonomy and Numerical taxonomy.

2. Answer the following questions

a. Write briefly about the following:

i. Allergens

ii. Nodel anatomy and taxonomy

iii. Endothelium

iv. Vivipary

b. Distinguish between:

i. Solanaceae and Ranunulaceae

ii. Euphorbiaceae and Asclepiadaceae

iii. Gramineae and Musaceae

3. Answer the following questions

a. Write on causes of pollen incompatibility and suggest methods to overcome the same

b. Name the centres of origin and the regions of present day cultivation of any two of the following:

i. Black pepper

ii. Cloves

iii. Sorghum

c. Name the source and economic importance of any two

i. Lac
ii. Teak
iii. Opium
iv. Katha

4. Give a brief illustrated account of the following:
   a. Protoplasm culture
   b. Bordered pit
   c. Tyloses
   d. Wood seasoning
   e. Transfusion tissue

Paper-II

Section A

1. Answer any three of the following in not more than 200 words each part:
   a. Describe the structure of thylakoid membrane in relation to its function.
   b. What are the principal chromosomal aberrations and how do they alter genetic ratios?
   c. Give briefly essential features of the development of gene concept.
   d. Discuss in short role of mutations in evolution.
2. Answer the following questions
   a. What is sex-linked inheritance? Explain with suitable examples.
   b. Discuss various methods employed in gene mapping.
3. How does gene recombination take place in population? Explain genetic drift give basic principles of population genetics.
4. Answer any two of the following:
   a. Write major objectives for plant breeding. Discuss the techniques of breeding used for plant improvement.
   b. What are his tones? Examine their role as genetic repressors in the light of modern knowledge.
   c. Critically evaluate the principal mechanism of organic evolution.

Section B

1. Answer any three of the following in not more than 200 words for each part:
   a. What is oxidative pentose phosphate pathway? What is its role in plant metabolism?
   b. Mention of causes of seed dormancy. Give the methods breaking the dormancy.

c. What is SPAC concept? Discuss he importance of this notion in plant water relations.

d. Present a brief account of the process of nitrate reduction in plants.

2. How is the CO2 concentrating mechanism during photosynthesis achieved in certain plants? Explain in detail this pathway and its superiority over the C3 photosynthesis.

3. Answer any two of the following:

a. What is plant succession? Discuss the process in relation to water factor.

b. Describe the various types of forest met within India.

c. Classify growth movements. Briefly mention the hormonal control of tropic movements in plants.

4. Answer the following questions

a. Write a short account of the need and technique of a forestation programme.

b. Mention the complete botanical names of plants yielding the following products, their families, the morphology of the part of economic importance and the uses in each case

i. Cashew

ii. Ginseng

iii. Til

iv. Sugarcane

c. Describe the role of biotic factors in the determination of plant communities.