IAS Mains Botany Papers 1995

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Paper-I

Section A

1. Answer any three of the following in nor more than 200 words each:
    a. What are plasmids? How are they related to bacteria?
    b. Discuss the significance of heterophony seen in selaginella.
    c. Briefly describe the physiological changes induced in a host plant by a parasite.
    d. With examples discuss how progressive sterilization of sporogenous tissue occurs in bryophytes.

2. Give a concise account of the life cycle of the causative organism, symptoms and control measures of any four of the following:
    a. Powdery mildew of Pea
    b. White rust of Brassica
    c. Blast of rice
    d. Little leaf of brinjal
    e. Damping off of seedings

3. Answer the following questions
    a. Give an account of the structure and mode of reproduction of bacteriophage.
    b. Describe the morphological nature of the sporocarp of marsilea.
    c. Describe the alternation of generations in Ectocarpus.

4. Answer the following questions
    a. Describe the life history of Sphagnum.
    b. Discuss the usefulness of microbes in agriculture.
    c. Write notes on the following:

i. Mycotoxins

ii. Megasporophyll of isoetes

iii. Reproductive structures of Chara

iv. Heterothallism in Fungi

Section B

1. Answer any three of the following in not more than 200 words each:
    a. Give an account of the female cone of Pinus.
    b. What is apomixes? What is its significance in plants?
    c. Describe the method of producing somatic hybrid plants.
    d. Describe the floral structure of Musa along with floral diagram and floral formula.

2. Compare the following
    a. System of classification of plants by Bentham Hooker and Engler & prantl.
    b. Female gametophyte of Cycas and Gmetum.
    c. Inflorescence of Euphorbia and Gmetum.

3. Answer the following questions
    a. Enumerate with brief notes the cytogenetic criteria in biosystematics.
    b. Describe the characteristic features of the family Cucurbitaceous. Give the floral formula and flora diagram. Write botanical names of five plants of the family having economic importance.
    c. Write short notes on:
        i. Totipotency
        ii. Orchid flower
        iii. Pollen sterility
        iv. Somatic embryo

4. Answer the following questions
    a. Describe the structure and morphological nature of endosperm in angiosperm.
    b. Compare the floral structure of Magnoliaceae with that of Ranunculaceae.

c. Write a brief account on each of the following:

i. male cone of Cycas

ii. Flower of a grass

iii. Leaf anatomy of C4 plants

d. Briefly describe each of the following:

i. Tetrasporic embrayosac

ii. Somaclonal variation

iii. Wood of Gnetum

iv. Polarity

v. Flower of Umbellifeae

Paper-II

Section A

1. Answer any three of the following. Each part should be answered in not more than 200 words.

   a. With the help of a diagram explain the ultra structure of the mitochondrion.

   b. What is male sterility? Explain its importance.

   c. Describe the structural variations in chromosomes.

   d. Explani the term Crossing over and write a note on its significance.

2. What is nutation and how can it be induced? Write a note on mutation breeding with special reference to achievements made in India.

3. Answer the following questions

   a. Discuss the modem concept of gene.

   b. Explain the term Hybrid vigour and write about its importance.

4. Write critical notes on any three of the following:

   i. MS Swaminathan

   ii. Somatic hybridization

   iii. Origin of life

iv. Genetic transformation

Section B

1. Answer any three of the following. Each part should be answered in not more than 200 words.

    a. Explain the carrier concept of ion absorption.

    b. Write a note on green revolution

    c. What is verbalization? Explain its importance.

    d. What is the importance of conservation of germplasm? Briefly describe the methods used for conserving germplasm.

2. How was abscisic acid discovered? Discuss in detail the physiological role of abscisic acid.

3. Answer the following questions

    a. Describe the important characteristics of RUBISCO and PEP carboxylase. What is the importance of these enzymes?

    b. Discuss the role of trace elements in plant metabolism.

4. Answer the following questions

    a. Write critical notes on the following:

        i. Water pollution and its control

        ii. Red-Far Red interaction

    b. Write the botanical name, family, plant part fro which it is obtained and uses of the following:

        i. Citronella oil

        ii. Atropine

        iii. Coco

        iv. Sugar.