

Time: 3 Hours.

Max. Marks: 100

- Instructions:**
1. All questions are compulsory.
  2. Draw neat and labeled diagrams wherever necessary.
  3. All questions carry equal marks
  4. Internal choices are indicated.

Q1. Attempt any two of the following questions: (20)

- A) Describe the structure of *Lepidostrobus*
- B) Write a detail note on external & internal structure of stem of *Lyginopteris oldhamia* and add a note on its systematic position.
- C) Describe the external and internal structure of *Pentoxylon*.
- D) Discuss the contribution of Birbal Sahni to Paleobotany.

Q2. Attempt any two of the following questions: (20)

- A) Give the morphological peculiarities and systematic position of family Umbelliferae.
- B) Give the classification, floral formula & any three plants of economic importance of family Rubiaceae.
- C) Give different forms of regular polypetalous corolla studied by you.
- D) Discuss the merits and demerits of Bentham & Hooker's system of classification.

Q3. Attempt any two of the following questions: (20)

- A) What is anomalous secondary growth? Describe the same in the stem of *Bignonia*.
- B) Describe and explain the nature of anomalous secondary growth in the stem of *Achyranthus*.
- C) What are Stomata. Describe the Anisocytic and Anomocytic type of stomata studied by you.
- D) Explain root-stem transition with any Two types studied by you.

Q4. Attempt any **two** of the following questions: (20)

- A) With neat labelled diagram explain sporoderm stratification of pollen grain.
- B) Explain the role of Palynology in Honey industry.
- C) Give a detail account of Erdtman's NPC system of pollen classification
- D) With respect to pollen grain explain polarity, shape and symmetry of pollen grains.

Q5. Write short notes on any **four** of the following: (20)

- a) Valvate and twisted types of aestivation
- b) Palynology in relation to Forensic science.
- c) Parts and functions of a typical carpel
- d) Diagrammatic representation of T.S. of Dracaena stem.
- e) Crossotheca
- f) Economic importance of family Solanaceae

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(3 Hours)

[Total Marks: 100]

- N.B.: 1) All questions are compulsory.  
2) Figures to the right indicate full marks.  
3) Draw neat labelled diagrams wherever necessary.

**Q.1: Attempt Any TWO of the following.** (20)

- Explain the various methods used in study of Ethnobotany.
- Explain the role of traditional medicine in wound healing and ageing.
- Comment on picking and packaging of mushrooms.
- Give the applications of ethnobotany in edible plants.

**Q.2: Attempt any TWO of the following.** (20)

- Explain the steps involved in construction of a Genomic Library.
- Citing an appropriate example, explain the construction of a restriction map.
- Explain the technique of Southern Hybridization.
- Comment on the screening technique of cDNA library.

**Q.3: Attempt any TWO of the following.** (20)

- With the help of a ray diagram, explain the construction and working of UV Spectrophotometer.
- State the principle of Colorimetry? Add a note on its construction and working.
- Explain in brief Molecular Sieve Chromatography.
- Give a general account of Column Chromatography.

**Q.4: Attempt any TWO of the following.** (20)

- Explain the macro and microscopic characters of Clove bud.
- What is the geographic distribution of *Acorus calamus*? Add a note on its chemical constituents.
- Comment on chemical constituents and therapeutic uses of *Senna* leaves. Add a note on common varieties.
- Which are the common varieties of *Curcuma longa*? Add a note on its medicinal uses.

**Q. 5 Write short notes on ANY FOUR of the following** (20)

- Therapeutic uses of *Rubia cordifolia* in skin ailments
- Spawning in mushroom cultivation
- Chromosomal library
- Applications of Ion Exchange Chromatography
- Principle of Partition Chromatography
- Chemical constituents of *Allium sativum*

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35991

(3 Hours)

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- Q.1 Answer any **Two** of the following:- 20  
A) Give an account of structure of vacuole in plant cells. Add a note on any two functions of vacuoles.  
B) Describe the steps involved in elongation of the protein chain.  
C) Describe the process of initiation of translation in eukaryotes.  
D) What are Polytene chromosomes? Write a note on their structure, occurrence and possible functions.
- Q.2 Answer any **Two** of the following:- 20  
A) "Transpiration is a necessary evil". Explain. Comment on various modes of transpiration.  
B) Explain how water potential helps in the translocation of solutes in plants.  
C) Describe the role of carriers in transport of solutes across cell membranes.  
D) What are macronutrients? Describe the role and deficiency symptoms of any two macronutrients studied by you.
- Q.3 Answer any **Two** of the following:- 20  
A) What is bioremediation? Explain the role of microbial population in bioremediation.  
B) What is phytoremediation? Explain phytoremediation of organic pollutants by plants.  
C) Define plant succession. Explain any three stages of a xerosere citing suitable examples of plants.  
D) What is bioaccumulation? How does bioaccumulation take place in an ecosystem?
- Q.4 Answer any **Two** of the following:- 20  
A) What are artificial seeds? State the various steps involved in production of artificial seeds.  
B) Write a detailed note on aspects of micropropagation with reference to Orchid cultivation.  
C) Explain the industrial method of production of Shikonin.  
D) Give a detailed account of Somatic hybridisation.
- Q.5 Answer any **Four** of the following:- 20  
a) Degeneracy of genetic code  
b) Composition of phloem sap  
c) Electrofusion of protoplasts  
d) Characteristics of ecological succession  
e) Monoclimax theory  
f) Advantages of somatic embryogenesis

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Q1. Answer any TWO of the following: 20

- A) Give general characters of Bacteria & Protozoa.
- B) What is sterilization? Explain in detail moist heat and chemical sterilization methods
- C) Write a detailed note on colony characters exhibited by bacteria.
- D) What is pure culture? Discuss any two methods of preparation of pure culture.

Q2. Answer any TWO of the following: 20

- A) Give detailed account of development of cystocarp in *Batrachospermum*.
- B) Give systematic position of *Polysiphonia*. Add a note on the thallus structure of *Polysiphonia*
- C) Give an account of asexual reproduction in *Vaucheria*.
- D) Explain the general characters of Bacillariophyta.

Q3. Answer any TWO of the following: 20

- A) Write general account of Basidiomycetes.
- B) Describe structure of gills in *Agaricus* with the help of suitable diagram
- C) Describe life cycle of *Puccinia* on the secondary host in relation with aecidiospore & pycnidiospore.
- D) Write a note on different types of spores and fructification in Deuteromycetes.

Q4. Answer any TWO of the following: 20

- A) Describe in detail the causal organism, symptoms, and control measures of "Tikka disease of Groundnut."
- B) Describe in detail the causal organism, host, symptoms, and disease cycle of "Citrus canker."
- C) Give a detail account of "Leaf curl virus in papaya."
- D) Write a general account of Physical control methods for plant diseases.

Q5. Answer any FOUR of the following: 20

- a) Acid fast staining
- b) Chantransia stage of *Batrachospermum*
- c) Systematic position of *Pinnularia*.
- d) Teleutospore in *Puccinia*
- e) Classification of *Alternaria*
- f) Diagrammatic representation of "Damping off seedling" disease.

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