

SEMESTER-II

Max. Marks - 40+10

Time- 3 Hrs.

PAPER –I DIVERSITY OF ARCHEGONIATES

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Bryophyta- General characters, classification (upto classes), alternation of generations, structure and reproduction (excluding development) of *Marchantia* (Hepaticopsida), *Anthoceros* (Anthocerotopsida), *Funaria* (Bryopsida).

UNIT-II

Pteridophyta- General characters, classification (upto classes), alternation of generations, structure and reproduction (excluding development) of *Rhynia* (Psilopsida), *Selaginella* (Lycopsida), *Equisetum* (Sphenopsida) and *Pteris* (Pteropsida).

**PAPER
-II
GENETICS
ICS**

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UNIT-I

Genetic Material: DNA the genetic material, DNA structure and replication, DNA-Protein interaction, the Nucleosome Model, Genetic Code, Satellite and Repetitive DNA.

Genetic Inheritance: Mendelism: Laws of segregation and Independent Assortment; Linkage Analysis; Allelic and non-allelic interactions.

UNIT-II

Genetic Variations: Mutations- spontaneous and induced; transposable genetic elements; DNA damage and repair.

Gene Expression: Modern concept of gene; RNA; Ribosomes; transfer of genetic information- transcription and translation (Protein Synthesis); regulation of gene expression in prokaryotes and eukaryotes; 1-D, 2-D and 3-D structure of Proteins.

Extra Nuclear Inheritance: Presence and function of Mitochondrial and Plastid DNA; Plasmids.

PAPER – III PRACTICALS

**Max. Marks -80+20* Time-
6 Hrs. (2 Sessions)**

1. Identify, classify and write short morphological notes giving well labelled relevant 26 **diagrams on the given specimens A, B, C and D (one each from Algae, Fungi, Bryophytes and Pteridophytes).**
2. Prepare the root smear and find out two different stages of Mitosis. Identify 10 **and show it to the examiners. Also give characters of identification.**
3. Numerical regarding Genetics (Mendelian Inheritance or Gene Interaction) as per syllabus. 10
4. Identify giving two important characters of identification on spots **1, 2, 3** and **4** (one slide or material each from Algae, Fungi, Bryophytes and Pteridophytes). 20
6. Note-book, collection and collection report. 12
7. Viva-voce. 12

LIST OF PRACTICALS (Semester I & II)

1. Stages of Mitosis from Material (Onion-root tips).
2. Experiments on Monohybrid and Dihybrid ratios.
3. Gene Interactions and modified Dihybrid ratios.
4. Chi-square analysis.
5. Type study- Specimens from Algae, Fungi, Bryophytes and Pteridophytes as per theory syllabus.
6. Field tour of an area rich in diversity of Archegoniates for collection of plants, plant diseases and preparation of Herbarium.
7. Preparation of Survey/Collection Report.