

**M.Sc.IISem**

**Paper – I**

**GeneticsandPlantBreeding**

**UNIT- I**

Q.1 Writeshortnotesonthefollowing(anytwo):

- a) Non-MendelianInheritance
- b) CytoplasmicMale Sterility
- c) Sex-reversal
- d) Roleof*RecA*and*RecBCD*enzymesin recombination

Q. 2 Whatdoyoumeanbysite-specificrecombination?Giveanexplanatory note on FLP/FRT and Cre/lox recombination.

**UNIT-II**

Define Mutation. Give a detailed account of various types of physical and chemical mutagens and discuss the molecular mechanism of mutation.

Write a descriptive note on DNAdamage repair mechanisms of mutational DNAdamages.

**UNIT-III**

What do you mean by Chromosome Mapping? Discuss the RAPD, QTL, and restriction mapping in understanding chromosome mapping.

What are chromosomal aberrations? Give a detailed account of structural and numerical alterations in chromosomes.

**UNIT-IV**

Writeshortnoteson(any two):

- a) C-value paradox
- b) Cotcurveandits significance
- c) FISHandGISH
- d) Computer-assistedchromosomeanalysis

With the help of suitable examples write the importance of plant breeding in the enhancement of crop quality with special reference to protein and oil.

### **M.Sc.Sem.II Botany**

#### **Paper II Morphology and Diversity of Vascular Plant**

**Attempt any two questions.**

#### **Unit I**

Q1. Write a short note on a) Economic importance of Pteridophytes.

Q2. Give a brief account of fossil Pteridophytes

- a) Rynia                      b) Lepidodendron                      c) Calamites

#### **Unit II**

Q3. Explain origin and evolution of stele in pteridophytes.

Q4. Write a short note on

- a) Sporangia of Gleichenia                      b) Sporocarp of Azolla                      c) Reproduction in Isoetes

#### **Unit-III**

Q5. Give detail notes on classification and Economic Importance of Gymnosperms with suitable diagrams.

Q6. Write short notes on: Any Two

- a) Postfertilisation changes in *Taxus*
- b) Morphology and development of reproductive structure of *Zamia*
- c) Prepollination changes in *Gnetum*

#### **UNIT-IV**

Q7. Write short notes on:

- a) Fossil of Gymnosperms belong to Coniferophyta
- b) Pteridosperms

Q8. Give a detail account on Geological timescale, types of fossils and techniques of fossils study.

### **M.SC II Sem Botany**

#### **Paper III-**

#### **Phytopathology**

#### **Assignment**

Answer any two questions in any unit Max Marks 30

(15+15)

#### **UNIT-I**

1. Define Symptom. Give an account of symptoms of plant diseases produced by different kinds of pathogens with suitable illustration.

(15)

2. Write a note on various dissemination techniques of plant pathogen and viruses. (15)

## UNIT-II

3. Describe Morphological defense mechanism in plants against pathogen. (15)

4. Write a brief account on chemical control of plant diseases. (15)

## Unit -III

5. Describe symptoms, causal organism, disease cycle and control mechanism of Karnal bunt of Wheat with suitable diagram. (15)

6. Give an account of symptoms, etiology, control mechanism of Black rot of Crucifer disease with suitable illustration. (15)

## Unit-IV

7. Describe symptoms, causal organism, disease cycle and control mechanism of Root Knot of Brinjal with suitable diagram. (15)

8. Write short note on following. (7.5+7.5)

a) Non parasitic diseases

b) Cadang–Cadang disease of Coconut

M.Sc. II Sem. (Botany)  
Fourth Paper  
Plant Physiology and Metabolism  
Assignment

(Attempt any two)

### Unit-I

Describe briefly the mechanism of loading and unloading of photo assimilates. (15)

Q2. Write short notes (7.5)

X2)

(a) Characteristics of enzyme and Kinetics

(b) Flavonoids

### Unit-II

Q3. What is photo phosphorylation. Write a detail account on Photo Phosphorylation with suitable diagrams. (15)

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Q4. Write short notes:- (7.5)

X2)

(a) Photosynthetic Pigments

(b) Electron transport system (ETS)

Unit-III

Q.5 Write a detail account of the lipid biosynthesis and oxidation ( $\alpha$  and  $\beta$  oxidation). (15)

Q6. Write short notes:- (7.5  
X2)

- (a) Nitrogen Fixation
- (b) Structure and function of Thiamine

Unit-IV

Q7. Write a detail note on the physiological effect, bioassay and mode of action of Auxins or Gibberellins. (15)

Q8. Write short notes:- (7.5  
X2)

- (a) Brassinosteroids
- (b) Methylhydrazide

**M.Sc.IV Sem.**  
**Botany**  
**Assignment April-2024**  
**Paper-I Embryology of Angiosperms**

Attempt any Two questions from any unit.

Max.Marks-

30 Unit-I

Q1.Explain structure and organization of embryo sac in Angiosperm.

(15)

OR

Write notes on:-

(7.5X2)

(a) Male sterility

(b) Pollen tube growth and guidance

Unit-II

Q2. What is self-incompatibility? Describe sporophytic and gametophytic self-incompatibility in plants.

(15)

OR

Write notes on:-

(7.5X2)

(a) Pollen-pistil interaction

(b) In-vitro fertilization

Unit-III

Q3. Describe molecular biology and biochemistry of fruit maturation.

(15)

OR

Write notes on:-

(7.5X2)

(a) Polyembryony

(b) Apomixis

Unit-IV

Q4. Give an account of metabolic changes associated with senescence influence of hormone and effect of environmental factors on senescence.

(15)

OR

Write notes on:-

(7.5X2)

(a) Seed dormancy

(b) PCD

## M.Sc. IV Sem Botany

### Assignment April-

2024

### Paper II-Plant Resource Utilisation and Ethnobotany

Attempt any Two Questions from any unit

Max. Marks-30

#### Unit I

1. Give a detailed account of evolution, origin, botanical characters, cultivation of and economic importance of Maize

2. Write short note on

(1) Medicinal Plants  
Rajasthan

(2) Spices and condiments of

#### Unit III

3. Give a detailed account on botanical characters, cultivation, processing of

4. Write short note on

(1) Plant used in sericulture

(2) Gums and resins Unit

#### III

5. Write a detailed account on In situ conservation.

Q.6 Write short note on

(1) cryopreservation

(2) wetland conservation Unit

#### IV

7. Write short note on

(1) BSI (Botanical Survey of India) (2) NBPGR

8. Write short note on

(1) Ethnic Group of India  
care.

(2) Role of Ethno Botany in national – health

**M.Sc.IV Sem Botany Assignment April-2024**  
**Paper III-Plant Biotechnology and Genetic Engineering**

Attempt any Two Questions from any unit

Max.Marks-30

**UNIT-I**

1. Write a detailed note on microspore culture for producing haploids and their importance.
2. With the help of suitable diagrams discuss the protoplast isolation methods, protoplast purification, viability tests, and protoplast culture methods in detail.

**UNIT-II**

3. Write the basic concept of metabolic engineering in detail.
4. Write a detailed note on the basic features of vectors used for plant transformation.

**UNIT-III**

5. Discuss the Biology of *Agrobacterium* and *Agrobacterium-mediated* gene transfer including the process of T-DNA transfer and integration. Write the practical applications of *Agrobacterium-mediated* gene transfer.
6. What do you mean by genome editing? explain TALE and CRISPR in detail.

**UNIT-IV**

7. Write a detailed account of Molecular farming for carbohydrates and lipids.
8. What do you mean by the term "*Bioinformatics*"? How it is utilized in biological databases and sequence analysis in organisms?



**M.SC IV Sem**  
**Botany**  
**Assignment April 202**  
**4**

**Paper-IV Advance Plant Pathology-II**

**Answer any two questions from any unit**

**Max Marks 30**

**(15+15)**

**UNIT-I**

1. What is forecasting? Describe various methods used in plant disease forecasting
2. Define Epidemic. Describe the role of various factors responsible for the establishment of an epidemic

**UNIT-II**

3. Write a note on traditional and non-traditional plant growth regulator in plant disease management
4. Describe the various chemical fungicides and their application in plant disease control

**UNIT-III**

5. What is variability. Describe general and specialized mechanisms of variability in host and pathogen.
6. Define Resistance. Discuss various types of plant resistance to pathogen.

**UNIT-IV**

7. How does biotechnology impinge upon plant pathology? Give a brief account of tissue culture and genetic engineering techniques important to plant pathology

8. Write short note on

a) Genetogene hypothesis

b) Molecular mechanism of resistance

**M.Sc.BOTANY SEM IV**

**Assignment April 202**

**4 PAPER-IV (B)**

**SEED SCIENCE AND TECHNOLOGY – II**

**Attempt any 4 Questions from any unit.**

**UNIT-I**

1. Write a detail note on biochemical, serological and nucleic acid based methods to detect seed borne infection.

**OR**

2. Write short notes on:

(a) Incubation and Culture method.

(b) Importance of seed pathology in modern agriculture.

**UNIT-II**

3. Describe the morphology and anatomy of seed in relation to invasion and inoculum of pathogen in seed coat and pericarp.

**OR**

4. Write short notes on:

(a) Environment influencing seed infection.

(b) Viral, bacterial and fungal inoculum in embryo.

**UNIT-III**

Q.5 Write short notes on the following:

(a) Karnal bunt of wheat

(b) Bacterial blight of cluster beans

(c) Ear cockle disease of wheat

**OR**

6. Write short notes on the following:

(a) Charcoal rot of sesame

(b) Black rot of mustard

(c) Pea seed borne mosaic virus

**UNIT-IV**

7. Discuss in detail about various physical, chemical and biological seed treatments to control seedborne diseases.

**OR**

8. Write short notes on:

- (a) Systemic and non-systemic transmission of seedborne disease.
- (b) Factors affecting seed transmission
- (c) Types of disease transmission.