

S.S. Jain Subodh P.G. College, Jaipur (Autonomous)
M.Sc. IV Sem. (Botany)
Paper-I Embryology of Angiosperms
Assignment March -2025

Unit-I

- Q1. Explain structure and organization of embryo sac in Angiosperm. (7.5)
Or
Q.2 Write notes on: - (3.5 + 4)
(a) Male sterility
(b) Pollen tube growth and guidance

Unit-II

- Q3. What is self-incompatibility? Describe sporophytic and gametophytic self incompatibility in plants. (7.5)
Or
Q4. Write notes on: - (4+3.5)
(a) Pollen-pistil interaction
(b) In-vitro fertilization

Unit-III

- Q5. Describe molecular biology and biochemistry of fruit maturation. (7.5)
Or
Q6. Write notes on: - (4+3.5)
(a) Polyembryony
(b) Apomixis

Unit-IV

- Q7. Give an account of metabolic changes associated with senescence influence of hormone and effect of environmental factors on senescence. (7.5)
Or
Q8. Write notes on: - (3.5 +4)
(a) Seed dormancy
(b) PCD

M.Sc. Sem. IV (Botany)

Paper II- Plant Resource utilization and Ethnobotany

Max.Marks-30

Unit I

1. Give a detailed account of evolution, origin, botanical characters, cultivation improved varieties and economic importance of Rice. 15

or

2. Write short note on : 7.5 x2
(1) Medicinal Plants (2) Fibre yielding plant

Unit-II

3. Give a detail account on botanical characters, cultivation, processing of Sugarcane. 15

Or

4. Write short note on- 7.5x2
(1) Plant used in sericulture (2) Gums and resin

Unit III

5. Write a detailed account on In situ conservation. 15

Or

6. Write short note on- 7.5x2
(1) Cryopreservation (2) Mangrove conservation

Unit IV

7. Write short note on - 7.5x2
(1) Indian Agriculture research Institute (2) NBPGR

Or

8. Write short note on- 7.5x2
(1) Ethnic Group of Indian
(2) Role of Ethnobotany in National health care.

M.Sc. IV Sem
Paper – III Plant Biotechnology and Genetic Engineering

UNIT- I

Q.1 Write short notes on (any two):

- i) culture media ingredients
- ii) callus and suspension cultures
- iii) aseptic techniques

or

Q.2 Write a note on the plant tissue culture applications.

UNIT- II

Q.3 Write short notes on.

- i) production of biopolymers
- ii) biodegradable plastics
- iii) manipulation of phenylpropanoids/shikimic pathway

or

Q.4 Write a detailed note on the Basic features of vectors used for plant transformation.

UNIT- III

Q.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.

or

write short notes on:

- i) Genome editing
- ii) Genetic manipulation for longer shelf life of fruits and flowers, colour manipulation of flower.

UNIT-IV

Q.7 Write short notes on;

- i) Molecular farming for carbohydrates
- ii) GMOs
- iii) Intellectual property rights

or

Q. 8 How bioinformatics utilized in biological databases and sequence analysis in organisms? Discuss BLAST in brief.

M.SC IV Sem. Botany
Paper-IV (A) Advance Plant Pathology-II
Assignment

Answer one question from each unit

Max Marks 30

(7.5x4= 30)

UNIT-I

1. What is Epidemic. Describe the role of pathogen responsible for the establishment of an epidemic. (7.5)

Or

2. What is forecasting? Describe Inoculum based methods use in plant disease forecasting. (7.5)

UNIT-II

3. Describe the various Regulatory methods used for plant disease control. (7.5)

Or

4. Write short note (4+3.5)

1) Physical methods of disease management

2) Traditional and nontraditional plant growth regulator in plant disease management

UNIT-III

5. Define Resistance. Discuss various type of plant resistance to pathogen. (7.5)

Or

6. Write a detail note on Integrated pest management.(7.5)

UNIT-IV

7. How biotechnology impinges upon the plant pathology? Give a brief account of tissue culture and genetic engineering techniques for production of disease resistant plants.(7.5)

Or

8. Write short note on (4.5+3)

a) Gene to gene hypothesis

b) Molecular mechanism of resistance

M.Sc. Botany Semester IV
PAPER-IV (B)
SEED SCIENCE AND TECHNOLOGY -II

UNIT-I

Q1. Discuss various methods for testing seed borne fungi, with the help of suitable diagrams. 15

OR

Write short notes on: 7.5+7.5=15

- a. Dry seed examination
- b. Standard blotter methods

Unit-II

Q2. Explain the mechanism of seed infection and its types with the help of diagrams. 15

OR

Write short notes on: 7.5+7.5=15

- a. Embryonal infection
- b. Anatomy of seed in relation to invasion

UNIT-III

Q.3 Write a detail note on smut and bunt of wheat. Mention causal organism, symptoms, disease cycle and control measures. 15

OR

Write short notes on: 7.5+7.5=15

- a. Bacterial blight
- b. Pea seed born mosaic

UNIT-IV

Q.4 Write a detail account on biological and chemical methods of seed treatments. 15

OR

Write short notes on: 7.5+7.5=15

- a. Factors affecting seed transmission
- b. Systemic and non systemic seed transmission

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M.Sc. Botany Semester II

Paper – I

Genetics and Plant Breeding

Assignment consists of 8 questions. Students are required to attempt 4 questions (one from each unit). Write answer in at least 500 words.

UNIT- I

Q. 1 With the help of suitable diagrams explain the Mendalian and non-Mendalian inheritance in detail.

or

Q. 2 what do you mean by site specific recombination? Give an explanatory note on FLP/FRT and Cre/lox recombination.

UNIT- II

Q. 3 Give a detailed account of various types of mutagens and molecular mechanism of mutation.

or

Q. 4 Write short notes on (any two):

- a) Mismatch repair and SOS repair mechanism
- b) Ames Test
- c) Site-directed Mutagenesis

UNIT-III

Q.5 Write short notes on:

a) Linkage map

b) Molecular markers

or

Q.6 what is polyploidy? Explain the role of polyploidy in crop evolution.

UNIT-IV

Q.7 Write short notes on (any two):

a) Nuclear DNA content and C-value paradox

b) Multigene families

c) Cot curve and its significance

or

Q.8 discuss the role of plant breeding in biotic (diseases and insect-pests) stress tolerance.

M.Sc. Botany Semester II

Paper II Morphology and Diversity of Vascular Plant

Assignment – March 2025

Maximum Marks: 30

Assignment consists of 8 questions. Students are required to attempt 4 questions (one from each unit). Write answer in at least 500 words.

Unit I

Q1. Write the general characters and economic importance of Pteropsida with suitable examples. 7.5

OR

Write a detailed account on classification of Pteridophytes. 7.5

Unit II

Q2. Describe the reproduction in *Gleichenia* with suitable diagrams. 7.5

OR

Describe stelar evolution system in Pteridophytes with suitable diagrams.

7.5

Unit III

Q3. Write the general characteristics features of Gymnosperms Draw general life cycle pattern. 7.5

OR

Write a short note on: (4+ 3.5)

- a) Economic importance of Gymnosperms.
- b) Pre and post pollination change in microspore of *Zamia*

Unit IV

Q4. Describe the various techniques used in fossil study and write brief account on Geological Time Scale. 7.5

OR

Write a short note on: a) *Lygenopteris*. (4+ 3.5)

b) *Medullosa*

M.SC II Sem Botany

Paper-III- Phytopathology

Assignment

Assignment consists of 8 questions. Students are required to attempt 4 questions (one from each unit). Write answer in at least 500 words.

Max Marks 30

UNIT-I

1. Define Symptom. Describe the various symptoms of plant diseases caused by plant pathogens with suitable illustration. (7.5)

Or

2. Write a note on various dissemination technique of plant pathogen and viruses. (7.5)

UNIT-II

3. Describe the mechanism of penetration and disease establishment in plants. (7.5)

Or

4. Write a brief account on biological control of plant diseases. ((7.5)

Unit -III

5. Describe symptoms, causal organism, disease cycle and control mechanism of Tikka disease of Ground Nut with suitable diagram. (7.5)

Or

6. Give an account of symptoms, etiology, control mechanism of Tungro disease with suitable illustration. (7.5)

Unit-IV

7. Describe symptoms, causal organism, disease cycle and control mechanism of Ear Cockle of Wheat with suitable diagram. (7.5)

Or

8. Describe symptoms, causal organism, disease cycle and control measurement of Cadang – Cadang disease of Coconut. (7.5)

M.Sc. Botany Semester II

**Paper-IV Plant Physiology and Metabolism
Assignment**

Assignment consists of 8 questions. Students are required to attempt 4 questions (one from each unit). Write answer in at least 500 words.

Unit-I

Q.1 Describe the mechanism of mineral ion uptake by plants. (15)

OR

- 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)

OR

- 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 (α and β oxidation). (15)

OR

- Q 6. 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 role, bioassay and mode of action of Auxins. (15)

OR

- Q8. Write short notes:- (7.5 X2)
(a) Brassinosteroids
(b) Morphactins,