Model Question Paper

M.Sc. Botany - Semester IV

Core Paper 401: GENETIC ENGINEERING OF PLANTS AND MICROBES.

(With effect from **2021 - 2022** admitted batches)

Time: 3 hours **Max. Marks: 80 marks**

(16 X 5 = 80)

Answer **one** question from **each Unit.**

All questions carry equal marks

Unit – I

1. a.Write about the various cloning vectors and give their importance in genetic engineering.
   b. Write a detailed essay on Restriction enzymes and their types, nomenclature and mechanism of action.

OR

2. a. Write an essay on the methodology of recombinant DNA synthesis and add a note on expression vectors.
   b. Explain in detail about cloning vectors and their role in rDNA technology.

Unit – II

3. a. Write an essay on bacterial transformation and add a brief note on the methods of gene transfer in plants.
   b. Explain in detail about transgenic plants and add notes on Golden Rice and Flavr-Savr Tomatoes.

OR

4. a.Write an essay on *Agrobacterium* mediated gene transfer methods and add a note on Chloroplast transformation.
   b. Explain in detail about the concepts of genomic library, cDNA library and lacZ gene based selection of transformants.

Unit – III

5. a. Write an essay on the technique of Southern blotting.
   b.Explain in detail about the technique of PCR and its types and applications.

OR

6. a.Write an essay on In-situ hybridization, its types and the probes used in each and its applications.
   b. Explain in detail about the technique and methods of DNA sequencing.

Unit – IV

7. a. Write an essay on the technique of DNA fingerprinting and its applications.
   b. Explain in detail about the methods used in restriction mapping.

OR

8. a. Write an essay on microarray technique and its applications.
   b. Explain in detail about genome sequencing and add a note on Next Generation Sequencing.

Unit – V

9. a.Write an essay on Plant growth promoting bacteria and add a note on Siderophores.
   b. Explain in detail about the ethical and environmental issues in genetic engineering and add a note on Intellectual Property rights.

OR

10. a.Write an essay on Bioinformatics, its scope, types of databases and add a note on BLAST.
    b. Explain in detail about genomics, its types and add a note on Human Genome Project.

Model Question Paper

M.Sc. Botany - Semester IV

Core Paper 402: EVOLUTION AND PLANT BREEDING

(With effect from **2021 - 2022** admitted batches)

Time: 3 hours **Max. Marks: 80 marks**

(16 X 5 = 80)

Answer **one** question from **each Unit.**

All questions carry equal marks

Unit – I

1. a. Write an essay on Basic concepts of monomers and polymers evolution.
   b. Write a note on Oparin and Haldane's theory.

OR

2. a.Write a brief note on Miller's experiment
   b. Write an essay on evolution of Prokaryotic cells and Eukaryotic cells.

Unit – II

3. a. Write an essay on Darwinism
   b. Discuss about synthetic theory of evolution.

OR

4. a. Write a note on gene duplications and divergence
   b. Discuss about Hardy Wien burg equilibrium and its applications

Unit – III

5. a. Write an essay on scope, history and objectives of plant breeding
   b.Write an essay on important achievements and undesirable consequences of plant breeding

OR

6. a. Write a note on ICAR and ASRB
   b. Discuss about central institutes for crop improvement.

Unit – IV

7. a. Write an essay on mass selection in plant breeding
   b. Write a note on pedigree method in plant breeding

OR

8. a. Write a note on synthetic varieties
   b. What is heterosis.Write its genetic and molecular significance.

Unit – V

9. a.Explain about basic concept of parametric methods
   b.Write a note on non-parametric methods

OR

10. a. Write an essay on central tendency and dispersion
    b. Give a brief note on t-test and ANOVA.

Model Question Paper

M.Sc. Botany - Semester IV

Core Paper 403: PLANT PATHOLOGY

(With effect from **2021 - 2022** admitted batches)

Time: 3 hours **Max. Marks: 80 marks**

(16 X 5 = 80)

Answer **one** question from **each Unit**.

All questions carry equal marks

Unit:1

1 A Explain the Importance of plant diseases,

B Write a note Plant diseases management through host resistance

OR

2 A Describe the classification of plant diseases

B Write a note Control of plant diseases

Unit: II

3 A Describe the Symptoms, etiology, and epidemiology of Tikka disease of ground nut.

B Write a note on soil borne diseases

OR

4 A Describe the Symptoms, etiology and epidemiology of Leaf spot of turmeric

B Write a note on Rust diseases

Unit: III

5 A Describe the Symptoms, etiology, epidemiology & control measures Citrus Canker

B Write a note on Viral diseases in Plants

OR

6 A Write a note on phytoplasmas diseases

B Describe the Symptoms, etiology and epidemiology of Bacterial leaf Blight of rice

Unit: IV

7 A Describe the Infection phenomena

B Write a note on Phytoalexins.

OR

8 A Explain Defense mechanisms in plants

B Write a note on Role of environmental effect of on plant disease development

Unit: V

9 A Write a note on Pectic, Macerating enzymes

B Explain types of Phytotoxins and Vivo toxins,

OR

10 A Write a note on cellulolytic, Lignolytic, Proteolytic enzymes

B Describe the host specific patho toxins & nonspecific patho toxins.

Model Question Paper

M.Sc. Botany - Semester IV

Core Paper 404: CROP PHYSIOLOGY AND BIOTECHNOLGY

(With effect from **2021 - 2022** admitted batches)

Time: 3 hours **Max. Marks: 80**

(16 X 5 = 80)

Answer **one** question from **each Unit.**

All questions carry equal marks

Unit – I

1. a. Write a brief notes on Seed Germination.
   b. Explain the synthetic seeds.

OR

2. a. Write a brief notes on Seed Dormancy.
   b. Write an essay on seed reserves and nutritional quality.

Unit – II

3. a. Explain the Light reactions.
   b. Describe the Source Sink relationship.

OR

4. a. Explain the Signal transduction in higher plants.
   b. Write a brief notes on Calcium-Calmodulin Cascade.

Unit – III

5. a. Write a brief notes on Salt stress.
   b. Explain the defence mechanism under stress.

OR

6. a. Write an essay on Heavy metal stress.
   b. Write a brief notes on abiotic stress.

Unit – IV

7. a. Explain the plant tissue culture techniques in Crop improvement.
   b. Write a brief notes protoplast fusion.

OR

8. a. Explain about basic principles of Recombinant DNA technique.
   b. Write a brief notes on Somatic hybridization.

Unit – V

9. a. Write a brief notes on Herbicide resistance in crop plants.
   b. Explain about genetic manipulation of crops for insect resistance.

OR

10. a. Write a brief notes on Genomics.
    b. Explain the principles of Micro array technology.