

**D-1597**

**Sub. Code**

**34611**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

First Semester

Botany

PLANT DIVERSITY

(CBCS 2018-19 Academic year onwards)

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Write notes on palmelloid and dendroid types of thallus in algae.
2. Write notes on zoospores and aplanospore.
3. Define heterothallism in fungi.
4. What are imperfect fungi?
5. Comments on Crustose and Fruticose.
6. Write short notes on gemmae and elater in bryophytes.
7. Define Antheridiophore and Archegoniophore in bryophytes.
8. Differentiate eusporangiate and leptosporangiate.

9. Write short notes on resin canal and pycnoxylic wood.
10. Write brief account on Fossilization.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions. Choosing either (a) or (b).

11. (a) Write an essay on Asexual Reproduction in Algae.
- Or
- (b) Compare the life cycles patterns of Chlorophyceae and Rhodophyceae.
12. (a) Give a brief account of the general characteristic features of Cycadales.
- Or
- (b) Give an illustrated account on life cycle patterns in Psilopsida and Lycopsida.
13. (a) Give the outline of classification of bryophytes.
- Or
- (b) Give a brief account on gametophytes and sporophytes of Anthocerotales.
14. (a) Describe the spore dispersal mechanism of fungi.
- Or
- (b) Explain the mode of reproduction in lichen.
15. (a) Give the diagrammatic representation of the life-cycle of *Cycas* and *Pinus*.
- Or
- (b) Write the characteristic features of Coniferales.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE of the following.

16. Write an essay on thallus organization in algae.
  17. Give the outline of Alexopoulos and Mims's system of classification of Fungi.
  18. Compare the structural variations in the gametophytes and sporophytes of Marchantiales and Jungermanniales.
  19. Enumerate the general characteristic feature of Ginkgoales.
  20. Discuss in detail about fossil gymnosperms.
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**D-1598**

**Sub. Code**

**34612**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

First Semester

Botany

PLANT TAXONOMY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Write a short note on Biotype
2. What is phylogenetic classification?
3. What is paratype?
4. Briefly discuss about Nomina Conservanda
5. Comment on rejection of names
6. Discuss the gynoecium of Aristolochiaceae
7. What is Utricle?
8. What is follicle?

9. Write short notes on vincristine
10. Give a brief account on ochreate stipule

PART B — (5 × 5 = 25 marks)

Answer ALL questions. Choosing either (a) or (b)

11. (a) Write a detailed account on author citation.

Or

- (b) List out the merits and demerits of Engler and Prantl's classification

12. (a) Briefly discuss about numerical taxonomy.

Or

- (b) Give an elaborate account on valid publication of names.

13. (a) Write a synoptic account on Biocode

Or

- (b) Discuss in detail about nominaconservanda

14. (a) List out the diagnostic characters of Loranthaceae.

Or

- (b) Compare the floral characters of Dioscoreaceae and Arecaceae.

15. (a) Write down the economic importance of Rubiaceae

Or

- (b) Briefly discuss the primitive characters of Menispermaceae.

PART C — (3 × 10 = 30 marks)

Answer any THREE of the following

16. Write an essay on Bentham and Hooker's classification and also list out its merits and demerits.
  17. Write a detailed account on principles of ICBN.
  18. Differentiate the floral characters of Polygonaceae and Sapotaceae.
  19. Explain the diagnostic characters of Asteraceae with neat sketches.
  20. Compare the gynoecium of Sapotaceae, Bignoniaceae and Mimosaceae.
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**D-1599**

**Sub. Code**

**34613**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

First Semester

Botany

BIOLOGICAL TECHNIQUES IN BOTANY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Digital imaging
2. Principles of light microscopy
3. What is fixation?
4. List out any three commonly used fixative
5. Maceration
6. Comment on squash
7. What is Mounting?
8. C<sup>14</sup>

9. Svedberg unit

10. DNA finger printing

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b)

11. (a) Write a brief account on TEM.

Or

(b) Explain in detail about microscopic measurements.

12. (a) Write a short account on steps involved in microtomy.

Or

(b) Briefly discuss about some cytological stains.

13. (a) Briefly discuss the embedding methods.

Or

(b) Write a short account on Dewaxing of the sections.

14. (a) Write a synoptic account on SDS-PAGE.

Or

(b) Write a detail account on micro slide preparation.

15. (a) Write an essay on RAPD.

Or

(b) Briefly discuss about Ultracentrifugation



SECTION C — (3 × 10 = 30 marks)

Answer any THREE of the following

16. Write an essay on SEM
  17. Discuss in detail about Phase contrast microscope
  18. Write a detail account on Ultra Microtome
  19. Write an essay on Southern Blotting
  20. Write a synoptic account on HPLC
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**D-1600**

**Sub. Code**

**34621**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Second Semester

Botany

CELL BIOLOGY, GENETICS AND PLANT BREEDING

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions..

1. Write about the membrane bound organelles in the prokaryotic cell
2. Define the term vesicles
3. Explain the role of centrioles in cell division
4. What are motor proteins?
5. Write the significance of cytokinesis
6. What do you mean by protein targeting?
7. Write the significance of polyploidy in plant breeding
8. Explain the concept of genetic drift

9. What is Hybridization?
10. Define: Hardey Weinberg Equilibrium

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Describe the structure and functions of plastids.

Or

- (b) Explain the structure and functions of cytoskeleton.

12. (a) Discuss the various steps in cell cycle.

Or

- (b) Describe the various transport mechanisms across the cell membrane.

13. (a) Briefly explain the Mendelian Laws of inheritance.

Or

- (b) Explain the significance of Neurospora tetrad analysis.

14. (a) Write short notes on male sterility in maize.

Or

- (b) Explain the role of mutation breeding in crop improvement.

15. (a) Briefly explain the selection methods in plant breeding

Or

- (b) Describe the sex linked inheritance with suitable examples.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Describe the ultra structure and functions of cellular organelles.
17. Describe the mechanism of sorting and regulation of intracellular transport of protein.
18. Write an essay on dominant and recessive epistatic gene interaction.
19. Explain in detail about the origin, types and significance of polyploidy in breeding.
20. Describe the breeding methods for self cross pollinating and apomictic plants.

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**D-1601**

**Sub. Code**

**34622**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Second Semester

Botany

PLANT ANATOMY AND EMBRYOLOGY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Write short notes on fascicular and interfascicular cambium
2. Write short notes on Pallisade parenchyma
3. What is metaxylem and protoxylem?
4. What is quiescent center?
5. Write any two mechanical properties of wood.
6. Define Megasporogenesis.
7. Write a short note on perisperm.
8. What is palynology?

9. Write a short note on triple fusion
10. What is a clone?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write a brief account on transfer cells.

Or

- (b) Give an outline of structural diversity of xylem.

12. (a) Discuss in detail about classification of woods.

Or

- (b) Give an outline of cambial variant in monocots.

13. (a) Discuss in detail about classification of woods.

Or

- (b) Differentiate compression wood from tension wood.

14. (a) Briefly discuss the pollen-stigma compatibility.

Or

- (b) Write a detail account on monosporic embryo sac.

15. (a) Write an essay on polyembryony.

Or

- (b) Differentiate apogamy from apospory.

SECTION C — ( $3 \times 10 = 30$  marks)

Answer any THREE questions

16. Write an essay on electron microscopic structure of cell walls.
  17. Elucidate anther development with neat illustrations.
  18. Discuss in detail about anomalous secondary growth in dicots.
  19. Write an essay on various types of endosperms found in angiosperms.
  20. Write a synoptic account on molecular aspects of higher plant reproduction.
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**D-1602**

**Sub. Code**

**34623**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Second Semester

Botany

PLANT PHYSIOLOGY AND BIOCHEMISTRY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is apoplastic pathway
2. Define Guttation.
3. What is the link between glycolysis and Krebs cycle.
4. List out the product of photorespiration.
5. Main function of pentose phosphate pathway.
6. How do calculate nutrient uptake in plants.
7. What is an R group of amino acid.
8. Define epimers.
9. Significance of Isozymes.
10. Role of Lyases.



PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Differentiate between osmotic pressure and diffusion pressure deficit.

Or

- (b) Explain the mechanism of entry of water in plants.

12. (a) Write short notes on crassulacean and metabolism.

Or

- (b) Give an account on the photo chemical reaction in plants.

13. (a) Give a brief account of carrier protein transport mechanism.

Or

- (b) Comment upon photochemical reaction.

14. (a) Write short notes on optical isomers.

Or

- (b) Explain the structure and function of sulphur containing amino acids.

15. (a) Differentiate between  $\alpha$  - oxidation and  $\beta$  - oxidation of fats.

Or

- (b) Write notes desmolyzing enzymes and the function.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What are the factors affecting transpiration process in plants.
  17. Explain the citric acid cycle and its energy balance sheet.
  18. Illustrate the schematic representation of path way and their significance.
  19. Starch and cellulose are composed of same type of monomers. How do these differ from each other in structure and function.
  20. Describe the chemical nature, mechanism of action and properties of enzyme.
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**D-1603**

**Sub. Code**

**34631**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Third Semester

Botany

MICROBIOLOGY AND PLANT PATHOLOGY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Write names of any two nitrifying bacteria
2. What are the common morphologies of bacteria?
3. What is Virion.
4. Chemical control methods of Downy Mildew of Grapes.
5. What are the symptoms of Rust of wheat in grain host?
6. Chemical control measures of late blight of potato.
7. What are the modes of entry of plant pathogens in to hosts.
8. List out any four antibiotics and their source microorganisms.
9. What are the steps involved in disease cycle?
10. What are the types of Archea?

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write notes on growth of bacteria.  
Or  
(b) How can you classify bacteria based on nutrition pattern?
12. (a) Write notes on Chemical nature of viruses.  
Or  
(b) Write notes on virus replication.
13. (a) Write notes on types of plant diseases.  
Or  
(b) Write notes on methods of studying plant diseases.
14. (a) Write notes on cultural practices of controlling diseases.  
Or  
(b) Enumerate various chemical control measures for plant diseases.
15. (a) Enumerate biological control measures.  
Or  
(b) Write notes on citrus canker.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write an essay on characteristics and economic importance of bacteria.
17. Write an essay on classification of viruses.

18. Write an essay on defense mechanisms in plants against the pathogens.
  19. Write an essay on integrated plant disease management.
  20. Write an essay on following virus causing diseases and its control measures:
    - (a) Tobacco Mosaic
    - (b) Bunchy top of banana.
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**D-1604**

**Sub. Code**

**34632**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Third Semester

Botany

ECOLOGY, BIODIVERSITY CONSERVATION AND  
ECONOMIC BOTANY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. State Gause's principle
2. Define commensalism.
3. Name few hotspot areas in India.
4. What is meant by IPR?
5. Give the botanical description of Rosewood.
6. Write the medicinal uses of *Rauwolfia serpentina*
7. Differentiate Patent and Copyright.
8. What is ecotone?
9. Define endemism
10. What is Red Data Book?

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write a note on population biology

Or

- (b) Compare and contrast *in situ* and *ex situ* conservation

12. (a) Write about the FlavrSavr™ tomato

Or

- (b) Write the botanical description, cultivation and medicinal uses of clove

13. (a) Write uses of Jatamansi, Sathavari and Saraca

Or

- (b) Write notes on regulating mechanisms of population biology.

14. (a) Elaborate on agrobiodiversity

Or

- (b) Role of WTO

15. (a) Write about the cultivation and uses of Sun hemp

Or

- (b) Elaborate on community organization.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write in detail on species interaction.
  17. Write about the phytogeographic zones.
  18. What are uses of following: Ginger, Cardamom, Nut-meg and pepper.
  19. Write in detail on the case study of Neem.
  20. Give a detailed note on plant-breeders right.
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**D-1605**

**Sub. Code**

**34633**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Third Semester

Botany

ALGAL TECHNOLOGY AND MUSHROOM TECHNOLOGY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Write any two uses of *Hematococcus*.
2. Explain single cell protein
3. Describe the nitrogen fixation.
4. What are the carriers used for mass cultivation of algae?
5. Write short notes on *nif* genes.
6. Write the medicinal uses of mushrooms.
7. Describe the inoculation of mushrooms.
8. Explain about any two diseases of mushrooms.
9. Write the importance of amino acids.
10. Give a short account on the mushroom drying.

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write the occurrence and distribution of marine water algae.

Or

- (b) Describe the thallus organization of fresh water algae.

12. (a) Give an account of *Azolla* as biofertilizer.

Or

- (b) Write notes on the applications of immobilization.

13. (a) Write short notes on the mass cultivation of macro algae.

Or

- (b) Give an account of blue green algae and their significance.

14. (a) How do you prepare mother spawn in saline bottle?

Or

- (b) Give a detailed farm design for production of low cost mushroom.

15. (a) Write the procedure for cultivation of Oyster mushroom.

Or

- (b) Explain about the disease management in mushroom.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Give an elaborate essay on the algae as a potential biofuel.
  17. Write notes on the applications of seaweeds in biotechnology.
  18. Explain about the mushroom packing and preservation techniques.
  19. Discuss about the factors affecting mushroom cultivation.
  20. Propose the algae as efficient biofertilizers.
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**D-1606**

**Sub. Code**

**34641**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Fourth Semester

Botany

PLANT MOLECULAR BIOLOGY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is Plasmid?
2. Transposable Elements
3. Define: DNA Ligases
4. PEG
5. Ribozymes
6. Flavr Savr
7. Transgenic Plants
8. Protease Inhibitors
9. Define: Selectable Marker
10. TATA box

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write a short notes on mitochondrial genome and cytoplasmic male sterility.

Or

- (b) Write notes on promoters used in plant vectors.

12. (a) Write notes on reporter genes and their role in optimizing plant transformation.

Or

- (b) Write notes on types and functions of seed storage proteins

13. (a) Write notes on mechanism of T-DNA transfer to plants

Or

- (b) Explore the methods to develop plants with insect pest resistance.

14. (a) Describe the development of Golden Rice Project and various consequences faced by the same.

Or

- (b) Comment on molecular pharming.

15. (a) Comment on concept of bioremediation through plants.

Or

- (b) Write notes on chloroplast proteins.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write an essay on molecular aspects of biological nitrogen fixation.
  17. Illustrate tools and general methodology of plant genetic engineering.
  18. Write an essay on development of plants with herbicide resistance and abiotic stress resistance.
  19. Write essay on Molecular markers and their applications.
  20. Illustrate various strategies for developing virus-resistant plants through plant genetic engineering.
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**D-1607**

**Sub. Code**

**34642**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Fourth Semester

Botany

BIostatistics, Biophysics and Bioinformatics

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are the advantages of tabulation?
2. Write down the difference between Mean and Mode.
3. Define Null hypothesis.
4. What are tests we used in small samples?
5. Write any two applications of Chi square test.
6. Write a short note on photobiology.
7. What is DNA sequence alignment?
8. Define Homologous gene.
9. Write a short note on Internet Protocol (IP).
10. What are primary databases?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) The following data are the weights of students in a class. Find the mean and median weights of the students.

Weight (Kg) :	10	20	30	40	50	60	70
Number of students :	4	7	12	15	13	5	4

Or

- (b) Explain F test and t test with suitable example.
12. (a) What are the advantages of sampling?

Or

- (b) Write a short note on solar energy.
13. (a) Describe the uses of various biological databases.

Or

- (b) Write down the types of database searching with example.
14. (a) Why phylogenetic analysis is important? When it is used.

Or

- (b) Illustrate global alignment with suitable example.
15. (a) Discuss the role of Bioinformatics in Pharmaceutical industry and Information technology.

Or

- (b) Describe the importance of Biological databases in Bioinformatics.



SECTION C — ( $3 \times 10 = 30$  marks)

Answer any THREE of the following.

16. What are the roles of Biostatistics in Bioinformatics?
  17. Write the steps to construct phylogenetic tree.
  18. Briefly explain about multiple sequence alignment.
  19. Explain protein sequence databases.
  20. What is meant by secondary database? What are the secondary databases?
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**D-1608**

**Sub. Code**

**34643**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Fourth Semester

Botany

HORTICULTURE AND PLANT TISSUE CULTURE

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is perlite?
2. What is grafting?
3. List out few synthetic hormones.
4. What is totipotency?
5. What are essential seeds?
6. Write about propagation by layering.
7. Define landscaping.
8. What are the ways of seed storage?
9. List out the micronutrients.
10. Write about importance of horticulture.

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) What are the divisions of horticulture?

Or

- (b) Explain the role of synthetic and native hormones.

12. (a) Write in detail of any three indoor gardening techniques.

Or

- (b) Write about the commercial importance of micropropagation.

13. (a) List out the ways of invitro production of secondary plant products.

Or

- (b) Write in detail on somaclonal variations.

14. (a) What are the different types of organic manures?

Or

- (b) Write notes on propagation by

(i) bulbs (ii) corms (iii) tubers (iv) rhizomes.

15. (a) Give an account on germplasm collection.

Or

- (b) What are the ways of maintaining the Bonsai? Elaborate.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. List out the different types soil and nutrients required for horticulture.
  17. Write in detail about the vegetative and reproductive growth of plants.
  18. Write about the outdoor gardening methods in detail.
  19. Elaborate protoplast fusion and their significance.
  20. Write about the micropropagation and its importance.
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