**D–1610**

| Sub. Code |
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| 34611 |

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2023.

First Semester

PLANT DIVERSITY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions

1. Define Heterocysts.
2. Explain about Akinetes.
3. Cryptoblasts.
4. Gymnomycota.
5. Define Ascospres.
6. Explain about Soredia.
7. Define Secondary protonema.
8. Define Strobilus.
9. Explain about Shower sulphur in coniferales.
10. Fossil Medullosa.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Give an account on concept of plant diversity.

Or

(b) Briefly explain about reproduction and life cycle patterns in Algae.

12. (a) Write short notes on thallus organization and reproductive pattern in fungi.

Or

(b) Describe the characteristic feature and classification of fungi by Alexopoulos.

13. (a) Write short notes on structure and reproduction of Lichen.

Or

(b) Give an account reproduction and life cycles of Phaeophyceae.

14. (a) Give a brief account of Characteristic feature of Jungarmanniales.

Or

(b) Write short notes on general feature of Lycopsida.

15. (a) Write briefly explain about general characters of Gnetales.

Or

(b) Describe the general feature and classification of Ptridophytes by Reiners.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe the general feature reproduction of Rhodophyceae.

17. Give a comparative account of the structure of sporophytes of Sphaerocarpales and calobyryales.

18. Briefly explain about fossils Sphenophyllum and Lepidodendron.

19. Describe the General characteristic and life cycle patterns in Pteropsida.

20. Give a comparative account of the structure gametophytes of cycadales and Coniferales.

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**D–1611**

| Sub. Code |
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| 34612 |

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2023.

First Semester

Botany

PLANT TAXONOMY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is a basionym?

2. Briefly discuss the homotypic synonyms.

3. Write any three demerits of Engler and Prantl's classification.

4. Write any three primitive characters of Ranales.

5. Define species.

6. What is 'Nomina Conservanda'?

7. Briefly discuss the flowers of Hydrocharitaceae.

8. What are 'aerial mistletoes'?

9. What is cypsela?

10. Briefly explain the panicle inflorescence.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write a synoptic account on scope of taxonomy.

Or

(b) Write a short essay on botanical nomenclature.

12. (a) Write down the merits of Takhtajan's classification.

Or

(b) Give a brief account on history of plant classification.

13. (a) Write an essay on 'Numerical Taxonomy'.

Or

(b) Discuss in detail on biosystematics.

14. (a) Write an essay on typification of names.

Or

(b) Explain the principle of priority and add a note on its limitation.

15. (a) Discuss the salient features of family Hydrocharitaceae.

Or

(b) Compare the floral characters of Mimosaceae and Myrtaceae.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write a detail account on Hutchinson's classification.

17. Write an essay on chemotaxonomy.

18. Write an elaborate account on author citation with suitable examples.

19. Compare the floral characters of Dioscoreaceae and Cyperaceae.

20. Compare the diagnostic characters of Rubiaceae and Apocynaceae with suitable examples.

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**D–1612**

| Sub. Code |
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| 34613 |

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2023.

First Semester

BIOLOGICAL TECHNIQUES IN BOTANY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Condenser
2. Depth of Filed
3. Cross Contamination
4. List out dehydrating agents used in microtomy.
5. Chromophore
6. Mordants
7. RAPD
8. RFLP
9. Half-life of isotopes
10. HPTLC

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Draw a detailed account on Camera Lucida for microscope.

Or

(b) Write notes on microscopic measurements.

12. (a) Write notes on Ultra microtome and its uses.

Or

(b) Write notes on Rotary microtome and its uses.

13. (a) Discuss about various methods of placing of plant sample in microslides.

Or

(b) Write notes on free-hand sectioning techniques, its advantages and disadvantages.

14. (a) Write notes on Liquid Scintillation Spectrometry.

Or

(b) Write notes on blotting techniques and hybridization.

15. (a) Write notes on PAGE technique and its applications.

Or

(b) Write notes on isoelectric focusing.

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

Answer any THREE questions.

16. Illustrate principle, parts, working mechanism and applications of Scanning and Transmission Electron Microscope.

17. Write an essay on material preparation techniques for microtome sectioning.

18. Write an essay on histochemical examination of immobilization of proteins, carbohydrates, lipid and enzymes in plant tissues.

19. Write an essay on principles and applications of polymerase chain reaction.

20. Write an essay on 2D electrophoresis.

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**D–1613**

| Sub. Code |
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| 34621 |

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2023.

Second Semester

CELL BIOLOGY, GENETICS AND PLANT BREEDING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Suicidal Bags
2. Peroxisome
3. Endocytosis
4. G1 and G2 phase
5. Crossing over
6. Uniparental inheritance
7. Nullisomy
8. Pedigree Breeding
9. Pure–line Selection
10. Heterosis

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Comment on the Eukaryotic cell.

Or

(b) Discuss about the Nuclear transport.

12. (a) Give an account of Active and Passive transport of ions.

Or

(b) List out the functions of Biological membrane.

13. (a) Summarize the Mitosis cell division.

Or

(b) Write short notes on: (i) Interphase (ii) M phase (iii) Cytokinesis.

14. (a) Write about the Crossing over.

Or

(b) What is Prion? Explain its applications.

15. (a) Describe the Apomixsis.

Or

(b) Discuss about the Hybrid vigour.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe the structure of Mitochondria and its functions.

17. What is Cytoskeleton? Explain its functions and networks.

18. Summarize the Protein storting in Nucleus and Endoplasmic reticulum.

19. Write about the Mendel's Laws of Inheritance.

20. Elaborate notes on the breeding methods in cross pollinated plants.

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**D–1614**

| Sub. Code |
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| 34622 |

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2023.

Second Semester

PLANT ANATOMY AND EMBRYOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Write short note on apical meristem.

2. Write the importance of Cellulose.

3. Write about the Companian cell.

4. Define the term Passage cells.

5. Enlist the major role of pith cells.

6. Differentiate the storied and non storied wood.

7. Mention the features of reaction wood.

8. Enlist the causes of pollen abortion.

9. Define pre-embryonic tissue.

10. Define apomixes.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the functions of plant cell wall.

Or

(b) Explain the structural diversity of xylem.

12. (a) Explain the formation and functions of fibres.

Or

(b) Compare the components of hard and soft wood.

13. (a) Describe the strategies for identification of wood.

Or

(b) List out the major categories of woods.

14. (a) Write a short note on compression wood.

Or

(b) Write short notes on megasporgenesis.

15. (a) Illustrate the stages of monocot embryo development.

Or

(b) Explain the strategies for the production of haploid plants.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the structural diversity and phylogenetic specialization of phloem.

17. Discuss in detail about floral vasculature.

18. Explain the natural defects associated with wood properties.

19. Discuss about the various type of endosperm.

20. Explain the various method of vegetative reproduction.

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| D–1615 | Sub. Code |
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| | 34623 |

DISTANCE EDUCATION

M.Sc.(Botany) DEGREE EXAMINATION, MAY 2023.

Second Semester

PLANT PHYSIOLOGY AND BIOCHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define water potential.

2. Explain the passive absorption of water.

3. Describe the root pressure theory.

4. What is transpiration? and explain the turgor pressure.

5. Write short notes on water stress on plants.

6. Write the difference between cyclic and non-cyclic phosphorylation.

7. Describe the nutrient uptake of plants.

8. Explain biological nitrogen fixation.

9. Write a short note on proteins.

10. Give a short account on the isoenzymes.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write about the transpiration and its significance.

Or

(b) Describe the water stress on crop production.

12. (a) Give an account of electron transport in mitochondria.

Or

(b) Write notes on the nutrient uptake and transport mechanism.

13. (a) Write short notes on structure of mono and polysaccharides.

Or

(b) Give an account of chemistry of biomolecules.

14. (a) Describe the structure and characteristics of proteins.

Or

(b) Give a detailed note on synthesis of amino acids.

15. (a) Explain the Michaelis-Menton equation and its significance.

Or

(b) Give an elaborate note on biosynthesis of fatty acids.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give an elaborate essay on the absorption of water and theories.

17. Discuss in detail about $C_4$ cycle and CAM pathway.

18. Explain about the Glycolysis and TCA cycle.

19. Summarize the structure, classification and biosynthesis of amino-acids.

20. Write an essay on Lipids.

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**D–1616**

| Sub. Code |
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| 34631 |

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2023.

Third Semester

MICROBIOLOGY AND PLANT PATHOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define Archaebacteria.
2. Define enrichment media.
3. What is Virons?
4. Define mycoplasma.
5. What is a microbial enzymes?
6. Define Pathogenesis.
7. What is etiology?
8. Write short notes on disease triangle.
9. Give the name of any two disease caused by nematodes.
10. What is Anthracnose of mango?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write down economic importance of bacteria.

Or

(b) Give the difference between Archaebacteria and eubacteria.

12. (a) Illustrated accounts on ultrastructure of bacteria.

Or

(b) What is difference between mycoplasma and phytoplasma?

13. (a) Given an account on classification of Viruses.

Or

(b) Briefly explain the causal agents responsible for fungal diseases on plants.

14. (a) Comments on Koch's postulates.

Or

(b) Given an account of Integrated Plant Disease Management.

15. (a) Write about the biological control measures of plant disease.

Or

(b) Briefly explain the Tobacco Mosaic Disease.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Briefly explain the bacteriological culture methods.

17. Given an account on classification of Microorganism.

18. Illustrated accounts on multiplication of virus inside the host cell.

19. What is disease cycle? Explain its types and steps involved in disease cycle.

20. Write essay on Red rot of sugarcane with reference to causal organism, symptoms, and disease cycle and control measures.

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**D–1617**

| Sub. Code |
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| 34632 |

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2023

Third Semester

ECOLOGY, BIODIVERSITY CONSERVATION AND ECONOMIC BOTANY

(CBCS 2018-19 Academic Year onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define ecosystem.

2. What is a food chain?

3. Write short notes on primary production.

4. Briefly explain the types of biodiversity.

5. Define endemism.

6. Write a short note on critically endangered plants.

7. Briefly discuss about biopiracy.

8. Texmati

9. List any two uses of rosewood.

10. Vegetable fats.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write a synoptic account on Gause's principles.

Or

(b) Briefly discuss about abiotic and biotic components of an ecosystem.

12. (a) Write a brief account on ecological succession.

Or

(b) Write a short essay on Ecological niches.

13. (a) List out the values of biodiversity.

Or

(b) Write an essay on red data book.

14. (a) Write an essay on patent.

Or

(b) Briefly explain the GM food.

15. (a) Discuss the cultivation and uses of pepper.

Or

(b) Explain the description, cultivation and uses of turmeric.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Write an essay on various types of species interaction.

17. List out the causes for the loss of biodiversity.

18. Discuss in detail about in-situ and ex-situ conservation of biodiversity

19. Write a detailed account on IPR.

20. Write an essay on the following medicinal and economically important plants.

    (a) Rauvolfia

    (b) Jatamansil

    (c) Jute.

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**D–1618**

| Sub. Code |
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| 34633 |

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2023

Third Semester

ALGAL TECHNOLOGY AND MUSHROOM TECHNOLOGY

(CBCS 2018-19 Academic Year onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is single cell protein with examples?
2. What are algal blooms?
3. What is biofertilizer with example?
4. Define *nif* genes.
5. What are some examples of free living nitrogen fixers?
6. What is biofuel production with reference to algae?
7. What are the edible fungi with examples?
8. What is meant by composting with example?
9. Write short notes on Mushroom Spawn.
10. Write down the nutritional value of *Pleurotus* sp.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write down the economic importance of algae.

Or

(b) Write essay on mass cultivation techniques of microalgae for biofuel production.

12. (a) Define immobilization. Explain the different methods of immobilization technique.

Or

(b) Mention the potential uses of seaweed in agriculture.

13. (a) Briefly explain the protoplast fusion technique for macro algae.

Or

(b) Write an elaborate note on compost preparation for mushroom cultivation.

14. (a) How do you prepare mother spawn for mushroom cultivation?

Or

(b) Write an elaborate note on cultivation of paddy straw mushroom.

15. (a) Write essay on Nutritive and Medicinal values of mushrooms.

Or

(b) Comments on mushroom marketing strategies in India.

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

Answer any THREE questions.

16. Write an essay on the upstream and downstream process of Spirulina cultivation.

17. Explain the mass cultivation methods of macro algae and their importance.

18. Briefly explain the cultivation procedure of mushrooms.

19. Briefly explain the factors affecting mushroom cultivation.

20. Discuss in detail about the mushroom processing and preservation techniques.

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**D–1619**

| Sub. Code |
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| 34641 |

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2023

Fourth Semester

PLANT MOLECULAR BIOLOGY

(CBCS 2018-19 Academic Year onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Satellite DNA

2. Palindrome sequences

3. Luciferase

4. pBR322.

5. ROS

6. Proteinase inhibitors.

7. STS

8. Bio-piles

9. Composting

10. Bio-scrubbers

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write notes on Plant Transposons.

Or

(b) Write notes on nucleus-encoded genes for chloroplast proteins.

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

Or

(b) Write notes on symbiotic nitrogen fixation in legumes by Rhizobia.

13. (a) Illustrate achieving delayed fruit ripening through genetic engineering.

Or

(b) Write notes on Golden Rice.

14. (a) Write notes on molecular pharming.

Or

(b) Write notes on RAPD.

15. (a) Write notes on promoter used in plant vectors.

Or

(b) Write notes on targeting of nuclear encoded cytoplasmic proteins to chloroplast compartments.

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

Answer any THREE Questions

16. Write an essay on Plant hormones.

17. Write an essay on direct methods of plant transformation techniques.

18. Write an essay on Ti-plasmid based vectors for plant transformation.

19. Explore various techniques in developing virus resistance in plants.

20. Write an essay on molecular markers.

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**D–1620**

| Sub. Code |
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| 34642 |

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2023.

Fourth Semester

BIOSTATISTICS, BIOPHYSICS AND BIOINFORMATICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define a Sample.

2. List any two differences between primary and secondary data.

3. Define first law of thermodynamic.

4. Define bioenergetics.

5. Define Bioinformatics.

6. What is pair wise alignment

7. Define standard error.

8. What is null hpothesis?

9. What is the wavelength of UV radiation and mention any one biological application of UV radiation.

10. What is action spectra?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short note on the data collection and interpretation

Or

(b) Explain in detail about the measures of central tendency.

12. (a) Write short note on null hypothesis and alternate hypothesis.

Or

(b) Write the steps for the analysis of Chi square test.

13. (a) Discuss an experiment to calculate redox potential of reaction.

Or

(b) Discuss about the phenomenon of fluorescence and phosphorescence.

14. (a) Discuss about any five applications of bio informatics.

Or

(b) Discuss about the primary protein data base.

15. (a) Write short notes on Entrez.

Or

(b) Explain in detail about the phylogenetic tree and its types.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. The length of plant leaves of two different species A and B were measured. Measurements were taken correct to the nearest cm and data were given in table. Calculate the mean, median and mode of Species A And B from the data given in table.

| Name of the species | Length of leaves (in cm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Specie A | 12 | 15 | 18 | 20 | 22 | 25 | 27 | 28 | 31 |
| Specie B | 8 | 6 | 15 | 7 | 10 | 18 | 19 | 20 | 22 |

17. Briefly discuss about the various methods of graphical representation of data.

18. Explain why ATP is a high energy compound.

19. Explain in detail about the phylogenetic analysis.

20. Briefly discuss about the BLAST algorithm and the various BLAST program.

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**D–1621**

| Sub. Code |
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| 34643 |

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2023

Fourth Semester

HORTICULTURE AND PLANT TISSUE CULTURE

(CBCS 2018-19 Academic Year onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. List out any four divisions of horticulture.

2. Vermiculite

3. Peat Soil

4. Germplasm.

5. Bulbs

6. Edges.

7. Arches.

8. Surface sterilants.

9. Cybrids

10. Pluripotency

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write notes on scope of horticulture.

Or

(b) Discuss about importance of macro nutrients for plant growth in horticulture.

12. (a) Write note on seed viability and germination.

Or

(b) Give a brief account on reproductive growth of plants.

13. (a) Write notes on water garden and its maintenance.

Or

(b) Write notes on rockery with suitable diagram.

14. (a) Write notes on somatic embryogenesis.

Or

(b) Write notes on role of hormones in regeneration of plants through tissue culture.

15. (a) Illustrate preparation of solid media along with detailed composition suitable for plant tissue culture.

Or

(b) Illustrate establishment and maintenance of callus culture from dicot plants.

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

Answer any THREE questions

16. Give a detailed account on climate requirements for successful horticultural practices.

17. Write an essay on production of seeds, storage and their certification.

18. Write an essay on Indoor gardening with suitable diagrams.

19. Write an essay on micropropagation with special reference to virus elimination.

20. Write an essay on in vitro production of secondary plant products employing plant tissue culture techniques.

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