D–8530	Sub. Code
	34611

DISTANCE EDUCATION

M.Sc.(Botany) DEGREE EXAMINATION, MAY 2025.

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 the questions.

1. Which vegetative reproduction types are present in algae?

2. What type of pigments are found in Rhodophyceae?

3. Name the major groups of fungi in Alexopoulos and Mims' classification.

4. What are conidia?

5. What are lichens?

6. Define isidia and soredia.

7. Name one unique feature of the sporophyte in Bryales.

8. Differentiate homospory and heterospory.

9. What is a distinctive feature of Ginkgoales?

10. What is the significance of Medullosa in fossil studies?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Discuss the classification of algae as proposed by Smith.

Or

(b) What are the major differences between sexual and asexual reproduction in algae?

12. (a) Explain the different types of thallus organization in fungi with examples.

Or

(b) Explicit the life cycle of Basidiomycetes with an example.

13. (a) Describe the structure and reproduction of lichens.

Or

(b) Compare the structural variations in gametophytes of Jungermanniales and Calobryales.

14. (a) Discuss the difference in sporophyte structure between Sphagnales and Andreales.

Or

(b) Summarize the classification of pteridophytes by Reiners.

15. (a) Explain the classification of Gymnosperms by K.R. Sporne.

Or

(b) Describe the reproductive structures found in *Caytonia.*

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail the different types of thallus organization in algae with diagrams.

17. Discuss in detail the classification of fungi by Alexopoulos and Mims, along with examples.

18. Write a detailed account of lichens, their structure, reproduction, and classification by Miller.

19. Give an elaborate account of life cycle patterns in *Psilopsida* and *Lycopsida*.

20. Describe the fossil Gymnosperm Medullosa, highlighting its structural and evolutionary significance.

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D–8531

Sub. Code
34612

DISTANCE EDUCATION

M.Sc.(Botany) DEGREE EXAMINATION, MAY 2025.

First Semester

PLANT TAXONOMY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define Ecad.

2. What is species?

3. Write about biological classification.

4. Why we called Perianth?

5. Define holotype.

6. What are conserved names?

7. Write the floral formula of Hydrocharitaceae and Arecaceae.

8. How the capitulum is a special type.

9. What is androecium character of Meliaceae?

10. List the botanical name of ornamental plants in Bignoniaceae.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Differentiate biotype and ecotype.

Or

(b) Draw the outline classification of Bentham and Hooker system.

12. (a) Briefly explain the importance and stages of chemotaxonomy.

Or

(b) List out the principles of ICN.

13. (a) Discuss the salient features of the family dioscoreaceae.

Or

(b) Analyze the floral characters of Cyperaceae with floral formula and diagram.

14. (a) Summarize vegetative and floral characters of Rubiaceae.

Or

(b) Enumerate the economic importance of Asteraceae.

15. (a) Explain the salient features of Menispermaceae.

Or

(b) Give an account on floral characters of Myrtaceae.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Elaborate the vegetative and reproductive characters of mimosaceae.

17. Discuss the salient features and economic importance of amaranthaceae.

18. Describe the vegetative and floral characters of Convolvulaceae.

19. Explain in detail about botanical nomenclature.

20. Analyze the phylogenetic system of classification by Engler and Prantl.

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D–8532

Sub. Code
34613

DISTANCE EDUCATION

M.Sc.(Botany) DEGREE EXAMINATION, MAY 2025.

First Semester

BIOLOGICAL TECHNIQUES IN BOTANY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define microscopy.

2. What is simple microscope?

3. What do you know about sledge microtome?

4. Write an example of monutants.

5. Define gram staining.

6. Why the dewaxing is necessary?

7. What is electrophoresis?

8. Write any one application of MALDI-TOF.

9. Define DNA profiling.

10. What western blotting?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Enumerate the advantages of digital imaging.

Or

(b) Summarize the applications of Hemocytometer.

12. (a) Briefly explain the purpose, mechanism, and examples of fixatives.

Or

(b) List out the common stains and their uses in plant anatomy.

13. (a) Elaborate the common staining procedure for protein.

Or

(b) Demonstrate the root tip squash technique.

14. (a) Simplify the dewaxing and staining of tissue sections.

Or

(b) Enumerate the applications of PAGE.

15. (a) Analyze the principles of GCMS.

Or

(b) Explain the applications of PCR.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Elaborate the steps involved in southern blotting technique and applications.

17. Describe the advantages, types, and applications of autoradiography.

18. Justify the principle, instrumentation, types of HPLC.

19. Explain in detail about methods of embedding.

20. Differentiate transmission from scanning electron microscope.

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D–8533

Sub. Code
34621

DISTANCE EDUCATION

M.Sc.(Botany) DEGREE EXAMINATION, MAY 2025.

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. What is the function of the nucleus in a cell?

2. What is the function of lysosomes in a cell?

3. Name the three main components of the cytoskeleton.

4. What is the difference between active and passive transport?

5. Name the organelle responsible for packaging and modifying proteins.

6. What is the significance of crossing over in meiosis?

7. Define polyploidy.

8. List two objectives of plant breeding.

9. What is apomixis? Provide an example.

10. What is hybrid vigor?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Compare the structural differences between prokaryotic and eukaryotic cells.

Or

(b) Describe the ultrastructure of mitochondrial and its role in energy production.

12. (a) Explain the role of intermediate filaments in maintaining cell integrity.

Or

(b) Illustrate the composition and assembly of the lipid bilayer in biological membranes.

13. (a) Describe the pathway of protein trafficking from the endoplasmic reticulum to the Golgi apparatus.

Or

(b) Analyze the concept and significance of cytoplasmic inheritance.

14. (a) Discuss the different types of mutations.

Or

(b) State and explain Hardy-Weinberg's law with its assumptions.

15. (a) Describe any two breeding methods used for cross-pollinated plants.

Or

(b) Explain the methods used in breeding for disease resistance in plants.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail the structure and function of the nucleus, including nuclear transport mechanisms.

17. Analyze, how ion channels, carriers and pumps function in membrane transport.

18. Evaluate the linkage, crossing over, and their importance in gene mapping.

19. Discuss polyploidy, its types, origin, and significance in plant breeding.

20. Examine the theories of inbreeding depression and how hybrid vigor can be utilized in plant breeding programs.

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D–8534

Sub. Code
34622

DISTANCE EDUCATION

M.Sc.(Botany) DEGREE EXAMINATION, MAY 2025.

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 the questions.

1. Define meristem.

2. List out the functions of the cell wall.

3. What are tracheids and its function?

4. Write notes on fascicular cambium.

5. What is meant by secondary growth?

6. What is root-stem transition?

7. Define cambinal variant.

8. What is resin ducts?

9. Write note on tapetum.

10. What is apomixis?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the types of meristems on the basis of origin.

Or

(b) Give an illustrated account on the structural diversity of phloem with diagram.

12. (a) Discuss about leaf trace and leaf gap in stem with suitable diagram.

Or

(b) Illustrate account on nodal anatomy in monocot steam.

13. (a) Discuss about cambial variants due to abnormal positioning of cambium.

Or

(b) What is transition of flowering and induction of flowering? Explain with example.

14. (a) Write short note on the resin ducts and gum ducts.

Or

(b) Explain in detail about the identification of hardwood.

15. (a) Give an illustrated account on the structure of pollen morphology.

Or

(b) Explain in detail about the agamospermy and apospory with suitable diagram.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in details about the theories of shoot apical meristem.

17. Briefly discuss about the structure, types and functions of vascular cambium.

18. Explain in details about the classification of wood system with example.

19. Give an illustrated account on various types of endosperms with suitable example.

20. Briefly discuss about the exploitation off polyembryony and apomixis in plant improvement programmes.

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D–8535

Sub. Code
34623

DISTANCE EDUCATION

M.Sc.(Botany) DEGREE EXAMINATION, MAY 2025.

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 the questions.

1. What is osmosis?

2. Mention two factors that affect the rate of transpiration.

3. Define photophosphorylation.

4. Significance of the electron transport chain in photosynthesis.

5. Name the end products of glycolysis.

6. What is cyanide-resistant respiration?

7. Define biological nitrogen fixation.

8. What is a monosaccharide? Give an example.

9. What is an allosteric enzyme?

10. State the Michaelis-Menten equation.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the mechanism of stomatal movement using the potassium ion (K+) theory.

Or

(b) Discuss the factors influencing water absorption in plants.

12. (a) Differentiate between cyclic and non-cyclic photophosphorylation.

Or

(b) Compare and contrast C3, C4 and CAM pathways.

13. (a) Highlight the electron transport chain in mitochondria.

Or

(b) Discuss the difference between active and passive nutrient transport mechanisms in plants.

14. (a) Explain the process of biological nitrogen fixation and its significance.

Or

(b) Describe the structure of monosaccharides and their stereoisomers.

15. (a) Discuss the concept of allosteric regulation in enzyme activity.

Or

(b) Explain the biosynthesis of fatty acids in plants and animals.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe the process of transpiration, its significance, and the factors affecting its rate.

17. Provide a detailed account of the photochemical reactions of photosynthesis, focusing on the light reactions and the electron transport chain.

18. Write a detailed account of glycolysis, including its steps, enzymes, and energy yield.

19. Provide a comprehensive overview of amino acids, including their classification, properties, and role in protein structure.

20. Derive the Michaelis-Menten equation and discuss its applications in enzyme kinetics. Explain how enzyme inhibitors affect enzyme activity.

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