D–5604

Sub. Code
34611

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

First Semester

Botany

PLANT DIVERSITY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL questions.

1. What is Lichen?

2. Differentiate sporangia and spore?

3. What is dolipore.

4. Define plectenchyma?

5. What is white rust?

6. Write about any four features of *Psilotum*.

7. Write a short note on the genus *Rhynia.*

8. Explain living fossils.

9. Define Eusporangiate.

10. What kind of Fertilization takes place in Gymnosperms?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Write notes on seed plants.

Or

(b) Explain gametophyte and sporophyte.

12. (a) Reproductive cycle of Chlorophyceae.

Or

(b) Write about the thallus organization of fungi.

13. (a) Write a short note on Caytonia.

Or

(b) List out the economic importance of Lichens.

14. (a) Explain the method of asexual reproduction in Cyanophyceae?

Or

(b) Give a general account on spores and germination of Andreales.

15. (a) Explain the Smith's algal classification.

Or

(b) Illustrate and explain the diplontic life cycle of *Diatoms.*

SECTION C— ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the thallus organization in algae.

17. Write a comparative note on the gametophyte and sporophyte of *Anthocerotales.*

18. Explain the classification of Bryophytes.

19. Give in detail the general features of *Psilopsida*.

20. List out the general characteristics of *Cycadales*.

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D–5605

Sub. Code
34612

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2022.

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 questions.

1. Write a note on 'Biological Species' concept.

2. List any two demerits of Hutchinson's classification.

3. What is an ecotype?

4. What is "OTU"?

5. Write short note on neotype.

6. Define the term 'invalid name'.

7. Write a short note on ochrea.

8. Briefly explain the spathe.

9. Write a brief account on androecium of Apocynaceae.

10. What is a lomentum?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the various theories of biological classification.

Or

(b) Give an outline of Bentham and Hooker's classification.

12. (a) Write a synoptic account on molecular systematics.

Or

(b) Give a detailed account on author citation.

13. (a) Briefly discuss the draft biocode.

Or

(b) Write an essay on valid publication of names.

14. (a) Discuss the salient features of Loranthaceae.

Or

(b) List out the diagnostic characters of Aristolochiaceae.

15. (a) Differentiate homogamous head from heterogamous head.

Or

(b) Explain the androecium of Scrophulariaceae with suitable illustrations.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write a detailed account on chemotaxonomy.

17. Explain the principles of ICBN in detail.

18. Compare the floral characters of Magnoliaceae and Menispermaceae.

19. Economic importance of Sapotaceae and Rubiaceae.

20. Compare the androecium and gynoecium of Meliaceae and Sapindaceae.

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D–5606

Sub. Code
34613

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

First Semester

Botany

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 questions

1. Define Chromatography.
2. What are enzymes?
3. Differentiate pellet and supernatant with suitable diagram.
4. What are the steps involved in microslide preparation?
5. Explain Histopathology.
6. Write about ocular micrometer.
7. Describe fixative and mordant staining.
8. Write about fixing methods.
9. List out the parts of light microscope.
10. Explain PAS reaction.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short note on Ultramicrotome.

Or

(b) Write about construction, working and applications of Dark field microscope.

12. (a) Explain about smear preparation.

Or

(b) Differentiate TEM and SEM.

13. (a) Comment breed method.

Or

(b) Write about the applications of HPLC.

14. (a) Explain hanging drop method.

Or

(b) Describe rotary microtome sectioning.

15. (a) Describe about PAGE.

Or

(b) Write about the principle and procedure of TLC.

PART C— ($3 \times 10 = 30$ marks)

Answer and THREE of the following

16. Explain SEM with suitable illustration.

17. Write about the steps and applications of Embedding methods.

18. Explain the Southern blotting techniques and its applications.

19. Illustrate about radioactive isotopes and their uses in biology.

20. Write a detailed on staining of proteins and carbohydrates.

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D–5607

Sub. Code
34621

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2022.

Second Semester

CELL BIOLOGY GENETICS AND PLANT BREEDING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL questions.

1. Differentiate eukaryotic cell from prokaryotic cell.

2. Define: Pigment systems.

3. Write the protein make up of cytoskeleton networks.

4. What are the sub-phases of prophase I in meiotic cell division?

5. Write notes on passive transport across cell membrane.

6. Define: Chaperones.

7. What are the significance of test cross and back cross?

8. What do you mean by gene mapping?

9. Write notes on Tautomeric shifts.

10. Write the facts about Inbreeding depression.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the structure and functions of suicidal bags of the cell.

Or

(b) Explain the semiautonomous nature of mitochondria and its evolutionary origin.

12. (a) Discuss the various steps in mitotic cell division.

Or

(b) Describe the process of protein sorting in endoplasmic reticulum.

13. (a) Briefly explain the induction and applications of prions.

Or

(b) Explain the types of linkage and crossing over.

14. (a) Describe the cytoplasmic inheritance in *mirabilis*.

Or

(b) Explain the types of mutagens and their mode of action.

15. (a) Discuss the role of genetic variability in plant breeding and crop improvement.

Or

(b) Explain the types of ploidy and its applications.

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

Answer any THREE questions.

16. Describe the ultra structure and functions of nucleus. Add notes on nuclear transport.

17. Describe the ultra structure of cell membrane and the transport across cell membrane.

18. Write an essay on allelic and non allelic gene interactions with suitable examples.

19. Discuss the significance of inbreeding and heterosis in plant breeding.

20. Define mutation breeding. Describe the breeding methods for disease resistance and stress tolerance.

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D–5608

Sub. Code
34622

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Second Semester

Botany

PLANT ANATOMY AND EMBRYOLOGY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Write the role of lateral meristem.

2. Define Albuminous cells.

3. Storied and Non storied cambium.

4. Mention the function of cambium.

5. Role of palisade and spongy parenchyma.

6. Define Ring porous wood with example.

7. Properties of monocot wood.

8. Significance of Tapetum.

9. Define Ruminate endosperm with example.

10. What is Agamospermy?

PART B — (5 × 5 = 25 marks)

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

11. (a) Write the classification of meristem based on cell division.

Or

(b) Write short notes on Tunica carpus theory.

12. (a) Explain the diagrammatic illustration of floral vasculature.

Or

(b) Explain the primary anatomical structure of Dicot root.

13. (a) Write an account on the mechanical properties of wood.

Or

(b) List out the commercial woods of south India. Add a note on their uses.

14. (a) Explain the development of microsporangium.

Or

(b) Give an account on pollen stigma compatibility.

15. (a) Define Apomixis. Explain their role in plant improvement programme.

Or

(b) Write an account on the molecular aspects of higher plant reproduction.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

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

17. Describe the structure and significance of Transfer cells.

18. Write an essay on the Root – Stem Transition process in plants.

19. Discus the natural defects of wood.

20. Define Endosperm. Explain the various types of endosperm found in plants.

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D–5609

Sub. Code
34623

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Second Semester

Botany

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 osmotic pressure.
2. Significance of Transpiration.
3. Define Redox potential value.
4. List out four important stage of photosynthesis.
5. Output of oxidative phosphorylation.
6. Which element and enzyme helps in nitrogen fixation?
7. Important of simplext carbohydrates.
8. Special end group of amino acids.
9. Mention any two function of lipids.
10. Composition of nucleic acids.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What do you understand diffusion and osmosis? How do these process help, plants to absorb water?

Or

(b) Give an account on the water stress on crop production.

12. (a) Write about the reaction of electron transport pathway and enzyme involved in this process.

Or

(b) What is photorespiration? Add their significance of photorespiration.

13. (a) Give an account on the oxidative phosphorylation.

Or

(b) Write short notes on cyanide resistant respiration.

14. (a) Briefly explain the classification of acidic and basic amino acids.

Or

(b) Write a brief account on the structure of protein.

15. (a) List out the general characteristics of enzyme.

Or

(b) Explain the structure and function of tRNA.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write an essay on the stomata and their role in transpiration.

17. Draw a labelled diagram of chloroplast and describe its role in photosynthesis.

18. Explain the nitrogen fixation through nodule formation in legume plants.

19. Classify carbohydrates giving suitable example.

20. Give the structure and mechanism of fat synthesis in plants.

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D–5610

Sub. Code
34631

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Third Semester

Botany

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 stationary phase.
2. Write short note on the Archea.
3. Fermentation.
4. Define fimbriae.
5. Describe the virus.
6. Explain the role of antibiotics.
7. What is Koch's postulate?
8. Describe the etiology.
9. Write short note on the biological control.
10. TMV.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Comment on the characteristics of bacteria.

Or

(b) Write about the pure culture of bacteria and their significance.

12. (a) Write briefly on the characteristics of virus.

Or

(b) Discuss about the Prions.

13. (a) Explain the symptoms of plant diseases.

Or

(b) Give an account of control measures of plant diseases.

14. (a) Write briefly about the defense mechanism in plants.

Or

(b) Describe the integrated plant disease management.

15. (a) Write the causal agents, symptoms and disease cycle of Bunchy top of Banana.

Or

(b) Write short notes on Blast and sheath blight of paddy.

PART C— ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write an essay about economic importance of bacteria.

17. Explain in detail about the human diseases caused by bacteria and viruses.

18. Discuss in detail on the enzyme production with appropriate examples.

19. Elaborate on the symptoms, pathogens and control measures of citrus canker.

20. Describe the disease cycle of Leaf spot diseases of groundnut and Wilt of cotton.

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D–5611

Sub. Code
34632

DISTANCE EDUCATION

M.Sc. (Botany) DEGREE EXAMINATION, MAY 2022.

Third Semester

ECOLOGY, BIODIVERSITY CONSERVATION AND ECONOMIC BOTANY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define : Biomass.

2. Write short notes on edge effect.

3. Write a short note on community.

4. What is phytogeography and add a note on its importance?

5. What are the components of biodiversity?

6. What are gene sanctuaries?

7. Briefly discuss the plant breeder's rights.

8. Write a brief description of sunflower.

9. What are the uses of rauvolfine and reserpine?

10. What is ethnobotany?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the abiotic and biotic components of ecosystem.

Or

(b) Write a short essay on food chain and food web.

12. (a) Discuss in detail about Gause's principle.

Or

(b) Write an elaborate account on values of biodiversity.

13. (a) Write an elaborate account on vegetation types in Tamil Nadu.

Or

(b) Discuss in detail about Biosphere Reserves.

14. (a) Write a short essay on GATT and list out its functions.

Or

(b) What are the general guidelines for research in transgenic plants?

15. (a) Briefly discuss the description, cultivation and uses of Turmeric.

Or

(b) List out the uses of Aconitum, Jatamansi and Neem.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss in detail on species interaction.

17. What are the causes for the loss of biodiversity?

18. Write an essay on Biodiversity Hotspots in India.

19. Elucidate in detail about IPR.

20. Write a detail account on economically important fibers and timbers.

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D–5612

Sub. Code
34633

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Third Semester

Botany

ALGAL TECHNOLOGY AND MUSHROOM TECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is the difference between the fresh and marine water algae?

2. Define Biofuel.

3. Write the role of *Botryococcus*.

4. Define Biofertilizers.

5. Describe the significance of symbiotic nitrogen fixation.

6. Explain the rope cultivation.

7. Define transformation.

8. Write any two species of edible mushrooms.

9. Write the nutritional significance of *Pleurotus*.

10. How to preserve mushrooms for a long time?

PART B — ($5 \times 5 = 25$ marks)

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

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

Or

(b) Describe the techniques of algae cultivation and their significance.

12. (a) Explain the algae used as biofertilizers.

Or

(b) Discuss about the free living and symbiotic nitrogen fixers.

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

Or

(b) Give an account of downstream process of algal cultivation.

14. (a) Mention the medicinal uses of mushrooms.

Or

(b) Write an elaborate note on preparation of compost and cultivation of *Agaricus bisporus*.

15. (a) Write the nutritive value of mushroom in India.

Or

(b) Explain the various factors affecting mushroom cultivation.

PART C— ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Write an essay on the economic importance of algae.

17. Explain the sea weed liquid biofertilizer and their significance in horticulture.

18. Discuss about spawn preparation and preservation.

19. What are the storage methods we have adopted for efficient cultivation of mushroom?

20. Write about the marketing strategies of mushroom in India and abroad.

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D–5613

Sub. Code
34641

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Fourth Semester

Botany

PLANT MOLECULAR BIOLOGY

(CBCS 2018 –19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions

1. Plant Transposons
2. Ethylene
3. *In situ* hybridization
4. Southern Blotting
5. Ti plasmid
6. Bar gene
7. Golden Rice
8. Flaw Savr
9. Antisense RNA approach
10. GUS

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write notes on classification and functions of seed storage proteins.

Or

(b) Write notes on chloroplast genome organization.

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

Or

(b) Write short notes on promoter used in plant vectors.

13. (a) Write notes on chloroplast engineering and development of transplastomic plants.

Or

(b) Write notes on developing transgenic plants with resistance to fungi and bacteria.

14. (a) Write notes on molecular markers.

Or

(b) Comment on "Bioremediation through plants".

15. (a) Write notes on types of Ti plasmids.

Or

(b) Write notes on developing transgenic maize plants devoid of cytoplasmic male sterility.

PART C— ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Write an essay on targeting of nucleus encoded cytoplasmic proteins to chloroplast compartments.

17. Explore various methods of direct plant transformation techniques.

18. Write an essay on developing transgenic plants resistance to herbicides and abiotic stress.

19. Write an essay on molecular pharming.

20. Illustrate nitrogen fixation process in legumes mediated by Rhizobium.

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D–5614

Sub. Code
34642

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Fourth Semester

Botany

BIOSTATISTICS, BIOPHYSICS AND BIOINFORMATICS

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions

1. What is a sampling error?
2. Briefly explain the hypothetical population
3. Write a short note on P-value.
4. Write a short account on Phosphorescence.
5. Briefly discuss the dual nature of light.
6. What is absorption spectrum?
7. Briefly discuss the triplet state.
8. What is substitution matrix?
9. Write any three uses of bioinformatics.
10. What is sequence alignment?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Brief account on common measures of central tendency.

Or

(b) Standard deviation and its significance.

12. (a) Write note on photobiology.

Or

(b) Redox potential and redox couples.

13. (a) Write notes on energy transduction in biological systems.

Or

(b) Discuss the efficiency and de-excitation of atoms.

14. (a) Give a brief account on data retrieval and analysis.

Or

(b) Briefly discuss the phylogenetic analysis.

15. (a) Briefly discuss the multiple sequence alignment.

Or

(b) Write an account on specialized sequence data base.

PART C— ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Write an essay on Chi square test.

17. Give an account on null hypothesis and alternate hypothesis

18. Explain the laws of thermodynamics with suitable examples

19. Write an elaborate account on FASTA

20. Write a detailed account on biological data bases

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D–5615

Sub. Code
34643

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

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)

Answers ALL questions

1. What is horticulture?
2. Importance of Macronutrients.
3. Define Organic manure.
4. Write short notes on growth regulators.
5. Design of hedges and edges.
6. Define Totipotency.
7. Virus elimination in micropropagation.
8. What is an Artificial seeds?
9. Somoclonal variation.
10. Importance of protoplast fusion.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short notes on division of horticulture

Or

(b) Explain the propagation methods of stem and root cutting

12. (a) Briefly explain about Principles and methods of designing outdoor garden

Or

(b) List out the Layout of a model college water garden.

13. (a) Write notes on Foliage plants and hanging basket plants.

Or

(b) Explain the Training and pruning of horticulture plants.

14. (a) Write short notes on establishment and maintenance of callus and suspension culture.

Or

(b) Briefly explain about stages and types of explants for commercial propagation.

15. (a) Give an account of Role of hormones in regeneration of plant.

Or

(b) List out the Principles and protocols of Protoplast isolation.

PART C – ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Describe the Scope of Horticulture.

17. Discuss in detail the biological components of Horticulture.

18. Elaborate in detail on gardening hedges, edges, tree climber, rockeries, arches and terrace garden.

19. Briefly explain about plant cell and tissue culture.

20. Describe the plant regeneration, Organogenesis and somatic embryogenesis.

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