UG-CS-1434 **BBOTS–11/ BBOTS-11C**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Botany

First Semester

PLANT DIVERSITY — I

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Agar-agar

2. Air bladder of *Sargassum*.

3. Uredospores

4. Apospory

5. Fruticose lichen.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Describe the diplohaplontic life cycle in algae.

7. Draw the female sex organ of *Polysiphonia* and explain.

8. Give the details of the asexual mode of reproduction in *Cercospora*.

9. Explain the antheridium of *Anthoceros*.

10. Elucidate the internal anatomy of a lichen.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. What are the general characteristics of algae?

12. Describe the mode of sexual reproduction in *Sargassum*.

13. How are fungi classified?

14. Discuss the economic importance of Bryophytes.

15. How does sexual reproduction take place in lichens.

16. Describe the internal anatomy of the capsule of *Polytrichum*.

17. Explain the different modes of vegetative reproduction in Bryophytes.

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U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Botany

Second Semester

PLANT DIVERSITY – II

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Sorus.

2. Sporophyll.

3. Hypogeal germination.

4. Polyembryony.

5. Rachis of *Cycas*.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Describe the heterosporous life cycle in Pteridophytes.

7. Explain the stelar structure of the internode of *Equisetum*.

8. What are the salient features of Gymnosperms?

9. Explain the anatomy of the coralloid root of *Cycas*.

10. What are the factors favouring fossilization?

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.
All questions carry equal marks.

11. How are Pteridophytes classified?

12. Describe the structure of the strobilus in *Selaginella*.

13. Write an account of the economic importance of gymnosperms.

14. Describe the structure of a female cone in *Pinus*.

15. What are the external and internal features of *Rhynia*?

16. Explain briefly the morphology of *Equisetum*.

17. Comment on the origin of land plants.

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U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Botany

Third Semester

MORPHOLOGY, PLANT ANATOMY AND EMBRYOLOGY

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Explain the types of phyllotaxy.

2. Distinguish between apical and lateral meristem.

3. Describe the importance of adventitious root formation.

4. What are the main parts of leaves and its function?

5. Distinguish between microsporogenesis and megasporogenesis.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Discuss about the types of inflorescence with suitable examples.

7. Write down the major criteria for classification of plant tissues.

8. Describe the anomalous secondary growth of monocot root.

9. Enumerate the leaf anatomy of C4 plants.

10. Comment on double fertilization and add notes on its significance.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Give an account on the floral parts of flower.

12. Enumerate the types of plant tissues and its functions.

13. Analyse the root anatomy of Dicot plant with suitable sketches.

14. Write an account on the nodal anatomy with suitable illustrations.

15. Discuss about the embryo rescue techniques and its applications in crop improvement.

16. Describe the vascular tissue and its function in plants.

17. Give a detailed account on structure, types and components ovule.

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U.G. DEGREE EXAMINATION – FEBRUARY 2025

Botany

Fourth Semester

MICROBIOLOGY AND PLANT PATHOLOGY

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words each.

All questions carry equal marks.

1. Flagella

2. Food spoilage

3. Actinomycetes

4. Capsid

5. Pathogen

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Discuss the different modes of nutrition in bacteria.

7. List down the microbial applications in industry.

8. Explain the harmful effects of bacteria in water.

9. Explain the structure of TMV.

10. Explain the mechanism of plant infection.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.
All questions carry equal marks.

11. Describe in detail the ultra structure and reproduction in bacteria.

12. Give a detailed account on food microbiology.

13. Write an elaborate account on microbes of air.

14. Write a detailed account on the lytic and lysogenic cycles of bacteriophages.

15. Write a detailed account on the different types and its control measures.

16. Describe the scope, history and classification of microorganisms.

17. Describe classification of plant disease. Write an account on management of plant diseases.

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U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Botany

Fourth Semester

PLANT TAXONOMY AND ECONOMIC BOTANY

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Perennial plants.

2. ICBN.

3. Racemose inflorescence.

4. Gynostegium

5. Hypogyny

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. What are the major differences between monocots and dicots?

7. Delineate the merits of Bentham and Hooker's classification.

8. Give an outline of the family Fabaceae.

9. Describe the flower characteristics of Nymphaeaceae.

10. Give a note on spice yielding plants.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Give a brief note on binomial nomenclature.

12. How were plants classified by Bentham and Hooker?

13. Discuss the uses of the plants of Sapotaceae.

14. What are the economic uses of Poaceae.

15. List the industrially important plant products and explain their uses.

16. Write a brief note on Sacred groves.

17. List the plants of medicinal use and explain their products.

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U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Botany

Fourth Semester

ECOLOGY FORESTRY AND EVOLUTION

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Comment on the Food chain and its different types.

2. Give an account of the Minamata disease.

3. Explain in brief the Ecological importance of the forests.

4. What are the measures to follow in the prevention of forest diseases?

5. Write short notes on the theory of evolution by Lamarckism.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Write a detailed account of the energy flow in the ecosystem.

7. Give an account of the sources and effects of air pollution.

8. Write a short essay on tropical dry forests and their different types.

9. Describe the forest management programme implemented by the government.

10. Write a short essay on the Oparin-Haldane theory of evolution.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Write in detail about the Nitrogen cycle in marine ecosystems.

12. Describe neatly the harmful effects of Thermal pollution.

13. Give a detailed account of the economic importance of forest products.

14. Write an essay on the Coppice systems and its advantages.

15. Write a detailed essay on Charles Darwin's theory of evolution.

16. Describe in detail the classification of xerophytes with suitable examples.

17. Write a detailed essay on adaptive radiation and give examples.

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U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Botany

Fifth Semester

CELL BIOLOGY, GENETICS AND PLANT BREEDING

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Comment on cell and its components.

2. Highlight the significance of mitochondria in plants.

3. Differentiate prokaryotic cells from eukaryotic cells.

4. Explain in detail about Mendalian Laws with examples.

5. How does hybrids are produced in plant breeding?

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Analyse various stages of meiosis in cell division.

7. Enumerate the different types of chromosome.

8. Explain the structure and function of nucleus.

9. Distinguish between linkage and crossing over add notes on its significance.

10. Write notes on plant breeding methods for cross pollinated crops?

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Give a detailed account on structure, characteristic features and functions of cell.

12. Discuss about the structure and functions of lysosomes.

13. Elucidate the different phases and mechanism of cell division.

14. Comment on mutation and add its effects on human genome.

15. Discuss about the polyploidy, types and its role in crop improvement.

16. Explain the techniques used in chromosome mapping and their applications.

17. Analyse the types and hybridization method for crop improvement.

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UG-CS-1442 BBOTS-52

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Botany

Fifth Semester

MOLECULAR BIOLOGY AND GENETIC ENGINEERING

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Explain the chemical composition of nucleic acid.

2. Explain the role of RNA polymerase in transcriptional process.

3. Comment on Lac Operon system.

4. Give short notes on types and uses of restriction enzymes.

5. How electroporation techniques used to deliver DNA into plant tissues?

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Discuss about DNA replication process in Eukaryotes.

7. Explain the mechanism of the Wobble Hypothesis.

8. Describe the regulation of gene expression in prokaryotes.

9. Write notes on southern blotting techniques with suitable sketches.

10. Describe the genetically modifies Bt-Cotton and their applications.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Describe the DNA damage and repair mechanisms.

12. Elaborate on post transcriptional modification in eukaryotes.

13. Explain the mechanism of gene silencing.

14. Enumerate the types of cloning vectors and its applications.

15. Discuss about the liposome mediated gene transfer methods and its advantages.

16. Describe the ethical issues related to GM plants.

17. Give a detailed account molecular markers and its application in genetics.

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U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Botany

Fifth Semester

DSC – BIOCHEMISTRY AND NANOBIOTECHNOLOGY

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Differentiate atomic number and atomic weight.
2. Distinguish between saturated and unsaturated fatty acids
3. Bring out the biological importance of protein.
4. Mention the sources of lignins and tannins.
5. Trace the importance of quantum dots in nanomaterials.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Elucidate the structure and properties of disaccharide.

7. How are amino acids classified based on side chains?

8. Examine the properties of enzyme. Mention the importance.

9. Simplify biological importance of steroids cholesterol

10. How do you classify the plant secondary metabolites?

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Classify the types and importance of polysaccharides.

12. Describe the structural configuration of protein molecule.

13. Enumerate the biological significance of protein.

14. Assign the importance of phenolic compounds in plant sources.

15. Analyze biological method of preparation of nanoparticles.

16. Compare and contrast stereo and optical isomerism.

17. Compile the structure, size and surface effects of nanoparticles.

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U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Botany

Sixth Semester

PLANT PHYSIOLOGY

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Water potential.

2. Photosystem.

3. Lipids.

4. Ethylene.

5. Natural ripening.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Write notes on Diffusion.

7. Explain Hatch Slack pathway.

8. Describe the process of Nitrification.

9. Write an essay on Gibberellic acid and its role.

10. Write notes on Vernalization.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Discuss the process of Transpiration.

12. Explain the process of Photosynthesis – neat sketch.

13. Describe the functions of Amino acids.

14. Explain the role of Cytokinins in the growth and development.

15. Explain Photoperiodism and its significance.

16. Give an account of the imbibition process.

17. Explain in detail about Respiration.

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U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Botany

Sixth Semester

PLANT BIOTECHNOLOGY

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Explant

2. Edible vaccine

3. Energy conservation

4. Fermentation

5. Anaerobic

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Describe the methods of callus culture.

7. Write notes on herbicide resistance on crop improvement.

8. Describe the methods of photoproduction of hydrogen.

9. Explain the nutritive value of Spirulina.

10. Describe the method of anerobic waste treatment.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Discuss the methods employed in embryo culture.

12. Write short notes on transgenic plants for crop improvement.

13. Give an account on biological production of hydrogen.

14. Explain the mass cultivation of yeast and its applications.

15. Describe the methods of bio gas production by waste treatment.

16. Describe the applications on plant tissue culture.

17. Give an account on biotic and abiotic stress tolerant on transgenic plants.

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U.G. DEGREE EXAMINATION – FEBRUARY 2025

Botany

Sixth Semester

DSC – BIOINSTRUMENTATION AND COMPUTATIONAL BIOLOGY

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words each.

All questions carry equal marks.

1. Human genome project
2. Microscopy
3. Beer-Lambert law
4. Gel filtration microscopy
5. Isoelectric focusing

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain the role of protein structure prediction.

7. Explain Phase contrast microscopy and its applications.

8. Give an account of UV spectroscopy and its uses.

9. Elaborate TLC principles and its applications.

10. Write notes on Agarose gel electrophoresis and its significance.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.
All questions carry equal marks.

11. Difference between BLAST and FASTA.

12. Describe SEM and its applications.

13. Write an essay on the HPLC principle and its working mechanism.

14. Explain the Ion exchange chromatography.

15. Explain the SDS PAGE and its applications.

16. Describe centrifuge and its types.

17. Explain in detail about 2D gel electrophoresis.

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