

F-2993

Sub. Code

7MBO1C1

M.Sc DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Botany

PLANT DIVERSITY

**(ALGAE, FUNGI, LICHENS, BRYOPHYTES,
PTERIDOPHYTES)**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Heterotrichous filament.
2. Carpogonium.
3. Hologamus.
4. *Cyphellae*.
5. Bryokinin.
6. Nematodontous peristome.
7. Sporocarp.
8. Endoscopic embryogamy.
9. Rhytidome.
10. Stigmaria.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write short essay on the sexual reproduction in diatoms.

Or

- (b) Describe the various types of life cycles in Phaeophyceae.

12. (a) Explain the life cycle of a saprophytic basidiomycete with reference to *Agaricus*.

Or

- (b) Give the general characters of Deuteromycotina.

13. (a) Describe the external and internal features of sporogonium of *Anthoceros*.

Or

- (b) Write notes on the gametophyte of *Polytrichum*.

14. (a) Explain the structure and development of Megaspore in *Selaginella*.

Or

- (b) Explain the various stages in the development of antheridium in *Psilotum*.

15. (a) Give a brief account of *Williamsonia* and its importance in Paleobotany.

Or

- (b) Give identifying characteristics of *Lepidodendron*.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Give an account of the origin and evolution of sex in Algae.
 17. Write an essay on the economic importance of fungi.
 18. Write an essay on vegetative reproduction in Bryophytes.
 19. Discuss the economic importance of Pteridophytes in detail.
 20. With the help of diagrams, describe the megasporogenesis in *Cycads*.
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F-2994

Sub. Code

7MBO1C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Botany

METHODS IN BOTANY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Resolving power.
2. FISH.
3. Freeze itching.
4. *Camera lucida*.
5. GLC.
6. Spectrum
7. Centrifugal force.
8. Pyrimidine.
9. Secondary data.
10. Leaf area index.

Part B**(5 × 5 = 25)**

Answer **all** questions, choosing either (a) or (b).

11. (a) Write brief notes on types of light microscopes with their applications.

Or

- (b) List out the safety procedures while working with microbes.

12. (a) Describe the procedure and use of Micrometry.

Or

- (b) List out the fixation methods in brief and its uses.

13. (a) With neat diagram explain the working of Column chromatography.

Or

- (b) Describe in brief the methods for analysis of lipids from plant samples.

14. (a) What are marker enzymes? Enlist some of its application with examples.

Or

- (b) Write brief notes on application of X ray diffraction in molecule characterization.

15. (a) Describe the process of morphological characterization and its advantages.

Or

- (b) List some of the physiological parameters for species characterization and its significance.

Part C**(3 × 10 = 30)**Answer any **three** questions.

16. With neat diagram explain the principle, components and application of fluorescence microscope.
 17. Describe in detail the methods of sample preparation for different microscopes and their significances.
 18. With neat diagrams explain the principle, process and application of HPLC.
 19. Describe in detail the mechanisms for characterization of protein using electrophoretic methods. Add a note on its application and advantages.
 20. Give a detailed account on the criteria adopted for ranking of species and its advantages.
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F-2995

Sub. Code

7MBO1C3

M.Sc DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Botany

MICROBIOLOGY AND PLANT PATHOLOGY

(CBCS – 2017 onwards)

Time: 3 Hours

Maximum: 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Nucleocapsid protein.
2. Potex Virus.
3. Diauxic growth.
4. Carboxysomes.
5. Symptoms.
6. Aflatoxin.
7. Microcyclic rust.
8. Damping off.
9. Vivotoxin.
10. Systemic infection.

Part B**(5 × 5 = 25)**

Answer **all** questions, choosing either (a) or (b).

11. (a) Write notes on the chemical composition of different viral group.

Or

- (b) Describe Baltimore system of classification in brief.

12. (a) Explain the factors that influence the biochemical growth in batch culture.

Or

- (b) Briefly describe the structure and composition of gram negative bacterial cell wall.

13. (a) Explain the various types of symptoms induced by the parasite on the host plant.

Or

- (b) Write notes on the prevention of prophylactic method of disease control in plants.

14. (a) Give an account on the mosaic disease to Tobacco.

Or

- (b) Describe in brief the etiology of the Tikka disease of groundnut.

15. (a) Explain the different abnormal growth developments due to hyperplasia and hypoplasia.

Or

- (b) Explain the pre-infectional or passive defense mechanism existing in the host.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail the classification, genome and replication of Virioids or Virions.
 17. Describe the molecular mechanism of bacterial transformation in detail.
 18. Explain the types of structural defence mechanisms in plants.
 19. Describe the causal organism, symptoms, disease cycle and methods of control of the disease '*Rust of Wheat*'.
 20. Write an account on the role of enzymes, toxins and growth regulatory substances produced by pathogens on the host plant.
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F-2996

Sub. Code

7MBO1C4

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Botany

CELL BIOLOGY AND BIOPHYSICAL CHEMISTRY

(CBCS – 2017onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Membrane pumps.
2. Lysosomes.
3. Repetitive DNA.
4. Reduction division.
5. Z-DNA.
6. Electrostatic interaction.
7. Biological energy transducers.
8. Isozymes.
9. Folds.
10. Helix-Z.

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe the mechanism of intracellular transport.

Or

- (b) Highlight the functions of vacuoles.

12. (a) What is operon? Explain it with one example.

Or

- (b) Discuss the stress response of microbes.

13. (a) Define (i) Epimers (ii) Anomers

Or

- (b) Give an account on β -oxidation.

14. (a) Give an account on first order and zero order reactions.

Or

- (b) Write short notes on biological energy transducers.

15. (a) Comment of super secondary structures of proteins.

Or

- (b) Compare the structural features of different forms of DNA

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the structure and function of cytoskeleton.

17. What is cell cycle? Discuss their regulating mechanism.

18. Elucidate the categories of bonds in biological systems.
 19. Outline the steps of Glycolysis. Comment on the energy yield of one molecule of glucose.
 20. Highlight the stabilizing factors proteins and DNA.
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F-2997

Sub. Code

7MBO1E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Botany

***Elective*-MUSHROOM CULTIVATION**

(CBCS – 2017onwards)

Time: 3 Hours

Maximum: 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Identification of edible mushroom.
2. *Amanita* sps.
3. Spawn
4. Thatched house.
5. Bacterial diseases in mushroom.
6. Cropping room.
7. Short-term storage of mushroom.
8. Vitamin rich mushroom.
9. Recipes from mushroom.
10. National Research Center for Mushroom.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Trace the history of mushroom cultivation.

Or

- (b) Discuss the various types of edible mushrooms.

12. (a) How do you prepare mushroom bed?

Or

- (b) Highlight the factors affecting the mushroom bed preparation.

13. (a) Draw the layout of spawn running room.

Or

- (b) Discuss any two pests of mushroom and their management.

14. (a) Write down the drying and freeze drying methods of storage of mushroom.

Or

- (b) Describe the canning and alginate coating in storage of mushroom.

15. (a) Discuss the marketing and export potential of mushroom.

Or

- (b) Give a brief account of the current scenario of mushroom industry in India.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Highlight the medicinal value of edible mushrooms.
 17. Discuss the method of mushroom spawn preparation.
 18. How do identify and manage the various fungal and bacterial disease affecting the mushrooms?
 19. Highlight the nutritive value of mushroom.
 20. How do you prepare mushroom soup and mushroom salad?
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F-2999

Sub. Code

7MBO2C2

M.Sc DEGREE EXAMINATION, NOVEMBER 2019

Second Semester

Botany

GENETICS AND EVOLUTION

(CBCS – 2017onwards)

Time: 3 Hours

Maximum: 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Pseudo allele
2. Penetrance
3. Interrupted mating
4. QTL mapping
5. Transversion
6. Monosomy
7. Evolutionary adaptation
8. Miller experiment
9. Gene duplication
10. Sympatricity

Part B**(5 × 5 = 25)**Answer **all** questions, choosing either (a) or (b).

11. (a) State and explain Mendelian law of independent assortment.

Or

- (b) Describe co-dominance with example.

12. (a) Describe the gene mapping strategies using somatic cell hybrids.

Or

- (b) Define and explain polygenetic inheritance with example.

13. (a) Discuss about the principle, method and applications of karyotyping.

Or

- (b) Write a short note on euploidy.

14. (a) Discuss about the abiotic synthesis of organic molecules.

Or

- (b) Write a short note on aerobic metabolism.

15. (a) Explain Hardy-Weinberg law.

Or

- (b) Write a short note on adaptive radiation.

Part C**(3 × 10 = 30)**Answer any **three** questions.

16. Discuss about different types of genetic recombination with suitable illustration.
 17. Give a detailed account on extra chromosomal inheritance.
 18. Explain different numerical changes of chromosomes with illustration.
 19. Write a comparative account on evolution of prokaryotes and eukaryotes.
 20. Explain the principle method and applications of molecular tools in phylogenetics.
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F-3000

Sub. Code

7MBO2C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Second Semester

Botany

**FUNDAMENTAL PROCESSES, CELL
COMMUNICATION AND CELL SIGNALLING**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Transcription factors
2. Polyadenylation
3. UAA
4. Proof reading
5. Give two examples for neurotransmitters.
6. Quorum sensing
7. Paratope
8. Monoclonal
9. Autoimmunity
10. B-cell

Part B**(5 × 5 = 25)**

Answer **all** questions, choosing either (a) or (b).

11. (a) Write notes on the enzymes involved in DNA replication and its significance.

Or

- (b) Briefly explain the role of different types of RNA in a cell.

12. (a) Write briefly on translational inhibitors with examples and their role.

Or

- (b) Describe the post translational modification of proteins and its significance.

13. (a) Write briefly on the principles of cell communications.

Or

- (b) Write notes on cell surface receptors with examples.

14. (a) Describe the process of innate and adaptive immune systems and its importance.

Or

- (b) Write notes on antigen-antibody interaction with examples.

15. (a) Explain the process of histocompatibility and its significance.

Or

- (b) Describe the mechanism of effector functions with examples.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Write a detailed account on DNA damage and repair mechanism and its importance.
 17. Describe the process of protein synthesis and processing mechanism in detail.
 18. Write an essay on cell communications and its significance. Add a note on integrins and its role.
 19. Write a detailed essay on structure and function of antibody molecules and its production in detail. Add a note on its applications.
 20. Write an account on B and T cell receptors and its role in immune responses.
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F-3004

Sub. Code

7MBO3C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Third Semester

Botany

PLANT PHYSIOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Solute transport
2. Trace elements
3. RuBPcase
4. Leghaemoglobin
5. Absorption spectrum
6. Phototropins
7. Parthenocarpy
8. Growth index
9. Terpenes
10. Heavy metals

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss the hydroponic culture of plants.

Or

- (b) Discuss the role of any four macroelements in plants.

12. (a) Explain the Emerson's enhancement effect and its significance.

Or

- (b) Outline the oxidative electron transport and comment on its significance.

13. (a) Give an account on the mechanism of action of Cryptochrome.

Or

- (b) Write a brief account on the effects of Vernalization.

14. (a) Bring out the role of ethylene in plants.

Or

- (b) Discuss the applications of growth hormones in horticulture.

15. (a) Trace the biosynthetic pathway of terpenes.

Or

- (b) Describe the role of temperature in plant systems.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the mechanism of loading and unloading of photoassimilates.
 17. Outline the CAM pathway and its significance in plants.
 18. Write notes on phosphorescence and Bioluminescence with illustrations.
 19. Describe the physiological role and mechanism of action of Gibberellins.
 20. Give an account of the responses of plants to biotic stresses.
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F-3005

Sub. Code

7MBO3C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Third Semesters

Botany

**DEVELOPMENTAL BIOLOGY AND PLANT
BIOTECHNOLOGY**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define self incompatibility.
2. Comment on potency.
3. What is meant by phyllotaxy?
4. What are frichomes?
5. Highlight the functions of *Taq* polymerase.
6. Write the functions of S1 nuclease.
7. What are Markergenes? Give an example.
8. Write the principle of DNA foot printing.
9. What are databases?
10. Define bioterrorism.

Part B**(5 × 5 = 25)**

Answer **all** questions, choosing either (a) or (b).

11. (a) Trace the stages of microsporogenesis.

Or

- (b) Write critical notes on pollen-egg recognition in plants.

12. (a) Describe the development of leaves from leaf primordia.

Or

- (b) Describe in brief the various types of stomata.

13. (a) List down the salient features of plasmids.

Or

- (b) Write any five features of BAC vector.

14. (a) Explain the concept and applications of chromosome walking.

Or

- (b) Describe the procedures followed in Western blotting.

15. (a) Define site directed mutagenesis and its applications in biotechnology.

Or

- (b) Critically analyse the importance of somatotropius and Interferons.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the development of embryo sac. Add a note on double fertilization.
 17. Expound the methods to overcome incompatibility.
 18. Describe the Ti plasmid mediated gene transfer in plants.
 19. Give a detailed account on the expression of eukaryotic genes in *E. Coli*.
 20. Write an essay on the applications of biotechnology in human welfare.
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F-3006

Sub. Code

7MB03C3

**M.Sc. DEGREE EXAMINATION,
NOVEMBER 2019**

Third Semester

Botany

PLANT ECOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Autecology
2. Agasthialmalai Biosphere Reserve
3. Physiographic factors
4. Niche width
5. Immigration
6. Population size
7. Carnivory
8. Ecotype
9. Acid rain
10. Phytoremediation.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a short note on limiting factors of an environment.

Or

- (b) Discuss about the productivity and special features of marine ecosystem.

12. (a) Enlist the significant functions of macroclimatic factors in an environment.

Or

- (b) Discuss about the impact of climate change on agriculture.

13. (a) Discuss about life history strategies with special reference to r selection.

Or

- (b) Define and explain extinction.

14. (a) Write a short note on negative interactions.

Or

- (b) Discuss about the special features of mangrove forest.

15. (a) Describe the impact and biological monitoring of chromium toxicity.

Or

- (b) Explain how the plants will be the indicators of pollution?

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the structure and function of an ecosystem with illustration.
 17. Write a detailed note on habitat niche.
 18. Give a detailed account on metapopulation.
 19. Discuss about the stages, mechanism and types of ecological succession.
 20. Write a detailed note on solid waste management
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F-3007

Sub. Code

7MBO3E4

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Third Semester

Botany

Elective – PLANT BREEDING

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Allogamy
2. Heterozygosity
3. Hybridization
4. Selection of Parents
5. Vavilov centre
6. Domestication
7. Mutation
8. Autopolyploidy
9. Polygenic inheritance
10. Backcross

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Highlight the achievements of Plant breeding.

Or

- (b) List down the basic principles of plant breeding.

12. (a) Enumerate the advantages and limitations of hybridization.

Or

- (b) Discuss the types of hybridization.

13. (a) Give a brief account on mass-selection.

Or

- (b) Explain the 'Centre of origin' of crop plants.

14. (a) Write short notes on induced polyploidy.

Or

- (b) What is the significance of auto and allopolyploidy in plant breeding?

15. (a) Highlight the mechanism of quantitative inheritance.

Or

- (b) Give an account of backcrossing and its significance.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Examine the significance of plant breeding.
17. Discuss the steps involved in hybridization.

18. Write down the selection methods for cross-pollinated and vegetatively propagated plants.
 19. Give an account of the role of biotechnology in crop improvement.
 20. Discuss the theories explaining the genetic cause of heterosis.
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F-3008

Sub. Code

7MBO3E5

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Third Semester

Botany

**Elective: RESEARCH METHODOLOGY
BIO INFORMATICS, BEHAVIOUR AND TEACHING
SKILLS**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Monograph
2. Plagiarism
3. Frequency polygan
4. Discrete series
5. BLAST
6. Courseware
7. Kin selection
8. Biological clocks
9. Skill of closure
10. Symposium

Part B $(5 \times 5 = 25)$

Answer **all** the questions choosing either (a) or (b)

11. (a) Differentiate the conceptual and empirical type of research.

Or

- (b) Highlight the various sources of literature.

12. (a) Illustrate various methods of presenting statistical data.

Or

- (b) What are the uses of regression analysis?

13. (a) Write short notes on Nucleic acid databases.

Or

- (b) Give an account on tools for sequence alignment.

14. (a) Elucidate the neural basis of learning.

Or

- (b) Comment on optimality in foraging.

15. (a) What are the characteristics of good teachers?

Or

- (b) Highlight the importance of probing questions.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Illustrate the various parts of a research report.
17. What is ANOVA? Explain the assumptions in analysis of variance.

18. Give a detailed account of ICT.
 19. Describe the methods and approaches in study of behavior.
 20. Explain the various models of teaching in brief.
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