S–0964

Sub. Code
23MBO1C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Botany

PLANT DIVERSITY I : ALGAE, FUNGI, LICHENS AND BRYOPHYTES

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Colonial algae

2. Diplobiontic

3. Dikaryotic mycelium

4. Basidiocarp

5. Saxicolous

6. Phycobiont

7. Elaters

8. Gametophyte

9. Alginic acid

10. Peat moss

Part B (5 × 5 = 25)

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

11. (a) Examine the contribution of Indain phycologists.

Or

(b) Discuss the Thallus organization in algae.

12. (a) List out the salient features of Dueteromycotina.

Or

(b) Write short notes on sex hormones in fungi.

13. (a) Write about the basidiolichens.

Or

(b) Write a brief account on occurrence of lichens.

14. (a) Give the outline of bryophytes classification by Watson.

Or

(b) Describe the structure of *Polytrichum* sporophyte.

15. (a) Proof lichen as a pollution indicator.

Or

(b) Explain the economic importance of fungi.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Briefly explain the classification of alge proposed by F. E. Fritsch.

17. Give a elaborate account on structure and reproduction of Rhyzopus.

18. Explain the structure and reproduction of Ascolichens.

19. List out the general characters of Marchantiales and Sphagnales.

20. Enlist the economic importance of algae.

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S–0965

Sub. Code
23MBO1C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Botany

PLANT DIVERSITY II – (PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY)

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Differentiate homosporous and heterosporous.
2. Prothallus.
3. What type of stele is found in *Equisetum*.
4. Symbiotic association in *Azolla*.
5. Siphonogamy.
6. What is evolutionary significance of gymnosperms.
7. How does *Gnetum* show angiosperm like features?
8. Economic importance of *Ephedra*.
9. Contributions of Birbal Sahni.
10. What is Calamites?

Part B (5 × 5 = 25)

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

11. (a) Illustrate the stellar evolution in pteridophytes.

Or

(b) Explain the telome concept and their significance.

12. (a) Compare the internal anatomy of *Equisetum* and *Osmunda*.

Or

(b) Describe the structure and reproduction of *Angiopteris*.

13. (a) Summarize the general characters of gymnosperms.

Or

(b) List out the economic importance of gymnosperms.

14. (a) Highlight the structure and reproduction of *Araucaria*.

Or

(b) Explain the structure and reproduction of *Ephedra*.

15. (a) Elucidate the methods of fossilization.

Or

(b) Illustrate account on geological time scale and its importance.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Analyze the significance of heterospory and seed habit.

17. Explain the structure, anatomy, reproduction and life cycle of *Pteris*.

18. Summarize the general account, morphology and phylogeny of gymno sperms.

19. Describe the structure, anatomy and reproduction of *Cupressus*.

20. Examine the economic importance of fossils with emphasis on fuels and industrial raw materials.

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S–0966

Sub. Code
23MBO1E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Botany

Elective – MICROBIOLOGY, IMMUNOLOGY AND PLANT PATHOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is the role of haemocytometer?

2. Define transduction.

3. Define viroids.

4. What is the lytic cycle?

5. What is mycotoxin?

6. Explain the biodegradation.

7. Define antigen and give an example.

8. ELISA.

9. What is inoculum potential?

10. What is plant quarantine?

Part B (5 × 5 = 25)

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

11. (a) Discuss the types of genetic recombination in bacteria.

Or

(b) Write short notes on the classification of bacteria based on morphology.

12. (a) Explain the replication of bacteriophages.

Or

(b) Explain the control of viral infections.

13. (a) What are the environmental factors that influence the soil microflora?

Or

(b) Describe the microbial interactions in the rhizosphere and phylloshere.

14. (a) Discuss the innate and adaptive immunity.

Or

(b) Explain the role of T cells in immune response.

15. (a) Write a short note on any two crop diseases in India.

Or

(b) Explain the concept of the disease triangle with an example.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the methods of isolation and cultivation of bacteria in detail.

17. Classify the viruses and describe their general structure and multiplication.

18. Provide the causes, transmission and prevention of water borne diseases like Swine flu and Measles.

19. Write an essay on different types of vaccines including recombinant vaccines.

20. Write an essay on classification, symptoms and causal agents of plant diseases.

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S–0968

Sub. Code
23MBO1E3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Botany

Elective – PHYTOPHARMACOGNOSY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define pharmacognosy.

2. Give an example of plant with analgesic properties.

3. Differentiate DXP and mevalonate pathway.

4. Significance of phenolic compounds in plants.

5. Distinguish TLC and HPLC.

6. Role of WHO guidelines in herbal drug quality control.

7. Bitter tonic.

8. CNS-stimulant.

9. What are allergenic plants?

10. Biopesticides.

Part B (5 × 5 = 25)

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

11. (a) Give an outline about history and scope of pharmacognosy.

Or

(b) Evaluate the pharmacological action of plant drugs.

12. (a) Explain the mevalonate pathway in the biosynthesis of terpenoids.

Or

(b) How does the shikimate pathway contribute to the formation of lignin?

13. (a) Enumerate the quality control of plant drugs.

Or

(b) Describe the significance of pharmacopoeial standards.

14. (a) Highlights the role of plant-derived anticancer drugs.

Or

(b) Discuss the mechanism of expectorant plant drugs.

15. (a) Summarize the pharmacological effects of hallucinogenic plants.

Or

(b) Analyze the plant based poisons used historically and in modern times.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Enlist the various systems of classification of drugs.

17. Describe the acetate pathway an its role in the biosynthesis of secondary metabolites.

18. Discuss the extraction, separation, isolation of Secondary metabolites.

19. Explain the Pharmacogenomics in personalized medicine.

20. Investigate the different types of plant toxins and their effects on humans.

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S–0970

Sub. Code
23MBO1E5

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Botany

Elective — ETHNOBOTANY, NATUROPATHY AND TRADITIONAL HEALTHCARE

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Ethnobotany
2. Anthropology
3. Tribals
4. Settlement of Kanis
5. PRA Techniques
6. Folk Taxonomy
7. Siddha medicine
8. Spiritual therapy
9. Bioprospecting
10. Metabolomic analyses.

Part B (5 × 5 = 25)

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

11. (a) Enlist the importance of ethnobotany.

Or

(b) Brief history of ethnobotanical studies in India.

12. (a) Enumerate the plants used by tribals of Tamil Nadu.

Or

(b) Give an account on life style of Paliyars.

13. (a) Illustrate the primary archeological sources and inventories.

Or

(b) How do you collect information from tribal people?

14. (a) Critically analyze the historical perspective of Unani medicine.

Or

(b) Write short notes on Homeopathy and Ayurveda.

15. (a) Comprehend the evidences based on phylogenetic analyses.

Or

(b) Give an account on Traditional knowledge digital Library (TKDL).

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Construct the ethnobotany knowledge of Sociological and anthropological.

17. Enumerate the distribution of ethenic communities in India.

18. Elaborate the secondary sources of ethnobotanical databases.

19. Analyses the treatment methods of Naturopathy medicine.

20. How does bioprospecting of drug molecules derived from Indian traditional plants?

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S–0971

Sub. Code
23MBO1E6

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Botany

Elective — HORTICULTURE

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Mesophyll tissues

2. Ripening

3. Thinning

4. Bio inoculant

5. Stratification

6. Corm

7. Synthetic seeds

8. Single node culture

9. Terrarium

10. Floral foam.

Part B (5 × 5 = 25)

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

11. (a) Discuss - Tissue systems.

Or

(b) Describe the respiration.

12. (a) Discuss about organic and inorganic fertilizers.

Or

(b) Explain the soil profile structure.

13. (a) Write short notes on :

(i) Tuber

(ii) Bulb

(iii) Rhizome.

Or

(b) Explain the types of layerage.

14. (a) What is artificial seed? Explain its preparation and uses.

Or

(b) Write about the soil-less production of horticultural crops.

15. (a) Write the principles and importance of Bonsai.

Or

(b) Examine the role of robotics in horticulture.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Define Transpiration. Explain its types.

17. Enlist the role of abiotic factors in plant growth and development.

18. What is seed dormancy? Write about the mechanism of seed dormancy.

19. Summarize the somatic embryogenesis.

20. Write an essay on flower arrangement.

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S–0972

Sub. Code
23MBO1S1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Botany

NURSERY AND GARDENING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Nursery.

2. Seedling.

3. Seed dormancy.

4. Parts of a seed.

5. Scion and Stock.

6. Types of cutting.

7. Gardening.

8. Garden adornments.

9. Methods of sowing.

10. Olericulture.

Part B (5 × 5 = 25)

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

11. (a) Enlist the scope of Nursery.

Or

(b) Enumerate the infrastructure of Nursery.

12. (a) Describe the structure and types of seed.

Or

(b) List out the factors affecting seed viability.

13. (a) How do you propagate air layering and its benefits?

Or

(b) Brief account on hardening of plants.

14. (a) Illustrate the different types of gardening.

Or

(b) Write short notes on home gardening

15. (a) Summarize the irrigation methods of gardening.

Or

(b) Enumerate the storage and marketing procedure of vegetables.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about the direct seeding and transplanting.

17. Investigate the causes and methods of breaking dormancy.

18. Construct the structure and function of green house.

19. Analyze the gardening parks and its components.

20. Describe the varieties and cultivation procedure of Brinjal.

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S–0973

Sub. Code
23MBO1S2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Botany

HERBAL TECHNOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Crude drugs.

2. List out any two aromatic plants in Tamil Nadu.

3. Elicitation.

4. Biotransformation.

5. List out any two chemical screening methods of drugs.

6. Drug evaluation.

7. What are herbal cosmetics?

8. Name the active glycosides found in Digitalis.

9. Biocides.

10. Resins.

Part B (5 × 5 = 25)

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

11. (a) Enlist the scope and importance of pharmacognosy.

Or

(b) Enumerate the methods of cultivation and utilization of aromatic plants.

12. (a) Describe the role of plant tissue culture in enhancing secondary metabolites.

Or

(b) Explain the step involved in the biogenesis of phytopharmaceuticals.

13. (a) Summarize the biological evaluation and analysis of herbal drugs.

Or

(b) Write a detailed account on chemical methods of drug evaluation.

14. (a) Discuss the extraction methods of glycosides with a focus on Dioscorea.

Or

(b) Elucidate the extraction methods for Mentha oil from plant samples.

15. (a) Clarify the applications of bio-fungicides and bio-pesticides.

Or

(b) Explain how women entrepreneurs are used market grown medicinal herbs.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the classification of drugs based on taxonomy, morphology, chemical and pharmacology.

17. Explain the production of secondary metabolites from *Andrographis paniculata* via tissue culture.

18. Investigate the drug adulteration and types of adulterants.

19. Expound the methods of extraction, isolation and characterization of tannins from plants.

20. Elucidate the extraction of alkaloids with a focus on *Taxus* and *Cinchona*.

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S–0985

Sub. Code
23MBO3C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Botany

CELL AND MOLECULAR BIOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Why do plant cells need a cell wall?

2. Define Symporters pump.

3. What is the significance of the endoplasmic reticulum?

4. What are two functions of vacuole?

5. What is meant by heterochromatin?

6. Define nucleosome.

7. What are an Okazaki fragments in DNA?

8. What is the reverse transcription?

9. Define apoptosis.

10. What does retinoblastoma do in the cell cycle?

Part B (5 × 5 = 25)

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

11. (a) Comments on fluid mosaic model of plasma membrane.

Or

(b) What is the difference between a channel carrier and a pump?

12. (a) Illustrate account on the structure and function of chloroplast.

Or

(b) Discuss about the structure of Golgi apparatus.

13. (a) Briefly explain about the structure and functional significant of Ribosome.

Or

(b) Explain about the structure of t RNA.

14. (a) Discuss about the DNA repair mechanism.

Or

(b) Write about the post transcription changes in eukaryotes.

15. (a) Explain in detail about the control mechanism of cell cycle.

Or

(b) Write about the bacterial transduction.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the structural organization of plant cell.

17. Explain about the Ultrastructure and molecular organization of mitochondria.

18. Describe about the DNA replication in prokaryotes.

19. Briefly explain about the enzymes involved in transcription.

20. Explain in detail about the Regulation of the Cell Cycle.

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S–0986

Sub. Code
23MBO3C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Botany

GENETICS AND PLANT BREEDING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

Write relevant short notes on

1. Alleles
2. Cistron
3. Tautomeric shift
4. Base analogs
5. Complete linkage
6. Polymorphic sites
7. Cultivar
8. Sports
9. Amphidiploid
10. NBPGR

Part B (5 × 5 = 25)

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

11. (a) Review the law of segregation with an example.

Or

(b) Distinguish between prokaryotic and eukaryotic gene structures.

12. (a) Discuss the repair mechanism for UV induced mutation.

Or

(b) Expound the molecular basis of Xeroderma pigmentosum.

13. (a) Briefly explain the gene mapping through terad analysis.

Or

(b) Depict the salient features of chloroplast genome.

14. (a) Enumerate the objectives of plant breeding.

Or

(b) Enumerate the objectives and methods in clonal selection.

15. (a) Give an account on polyploidy.

Or

(b) Discuss the advanced methods in plant breeding.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the various levels of regulation of trp operon

17. Illustrate the critical steps in the Holliday model of recombination

18. Highlight the role of various molecular markers in gene mapping

19. Elucidate the theory, procedure and applications of pure line selection

20. Elaborate the objectives, methods, merits and demerits of plant introduction

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S–0987

Sub. Code
23MBO3C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Botany

RECOMBINANT DNA TECHNOLOGY AND INDUSTRIAL APPLICATION

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Comment on genomic library.

2. Differentiate exonucleases from endonucleases.

3. Enlist the importance of automated sequencing.

4. How will you select correct promoter sequence?

5. What is the role of human deoxyribonuclease I?

6. Write down the functions of β -glucocerebrosidase.

7. Mention the symptoms of hairy cell leukemia.

8. How can malignant glioma be treated?

9. What do you mean by bioethics?

10. Define biopiracy.

Part B (5 × 5 = 25)

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

11. (a) Highlight the steps involved in recombinant DNA technology.

Or

(b) Comment on indirect gene transfer methods.

12. (a) Mention the importance of promoters for the programmed expression of alien genes.

Or

(b) Explain site-directed mutagenesis.

13. (a) Summarize the production of vitamin C from *Saccharomyces*.

Or

(b) Discuss the production of vitamin B12 from *Paracoccus denitrificans*.

14. (a) Write short notes on interferons.

Or

(b) Infer the symptoms and risk factors of melanoma.

15. (a) Bt-cotton is used in agriculture to control pests - Substantiate.

Or

(b) Brief the cheese ripening process.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Narrate the construction of cDNA library and its applications.

17. Elaborate the chain termination sequencing method.

18. Write an essay on production of L-asparaginase.

19. Describe the methodology of hepatitis B vaccine production.

20. Expound the production of fungal alpha amylase in sericulture.

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S–0990

Sub. Code
23MBO3E3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Botany

***Elective* — APPLIED PLANT CELL AND TISSUE CULTURE**

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Write down the basic steps in plant tissue culture.
2. What is a solidifying agent?
3. Define callus.
4. List out the various stages of somatic embryo.
5. What is the principle of protoplast culture?
6. Enlist the applications of single cell culture.
7. Mention the advantages of organ culture.
8. How will you extract food additives in *in vitro* system?
9. What do you mean by biotransformation?
10. List out the applications of tissue culture in agriculture.

Part B (5 × 5 = 25)

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

11. (a) Infer the various methods of sterilization.

Or

(b) Mention the organic supplements and growth regulators used in plant tissue culture.

12. (a) Compare somaclonal and gametoclonal variation.

Or

(b) Highlight the steps involved in meristem culture.

13. (a) Brief the cell suspension culture with its applications.

Or

(b) Summarize the steps involved in anther culture.

14. (a) Provide the applications of cell culture systems in metabolic engineering.

Or

(b) Write the procedure for extraction of alkaloids in *in vitro* system.

15. (a) Narrate the steps involved in cryopreservation.

Or

(b) Comment on food vaccines and its benefits.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Elaborate the preparation of MS and B5 medium.

17. Explain the various stages of micropropagation with its applications.

18. Describe the techniques involved in protoplast fusion.

19. Discuss the screening methods of high yielding cell lines.

20. Write an essay on plantigens and plantibodies.

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S–0991

Sub. Code
23MBO3E4

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Botany

***Elective* — INDUSTRIAL BOTANY**

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Alginin

2. Kieslguhr

3. Pasteurization

4. Instant Yeast

5. Sunn hemp

6. Dammer gum

7. Biominin

8. Asphyxiation

9. Agrobacterium tumefaciens

10. Rabies vaccine.

Part B (5 × 5 = 25)

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

11. (a) Explain the role of algae in fodder industry.

Or

(b) Justify algae is used as fertilizer.

12. (a) Describe the rote of fungi in alcohol fermentation.

Or

(b) List out the beneficial uses of yeast.

13. (a) Write about the fibre-yielding plants.

Or

(b) Write short notes on:

(i) Tannins

(ii) Dyes

14. (a) Explain the role of bacteria in food industry.

Or

(b) Discuss — Dairy products.

15. (a) Write concise notes on somatic seeds.

Or

(b) Briefly explain about the transgenic plants.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Give detailed account on algae in pharmaceutical industry.

17. Write about the role of fungi in organic acid preparation and cheese production.

18. Write short notes on:

    (a) Sugars and starches

    (b) Pulp and paper.

19. Explain about the bioremediation.

20. Describe the microprapagation.

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S–0992

Sub. Code
23MBO3S1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2025.

Third Semester

Botany

SILVICULTURE AND COMMERCIAL LANDSCAPING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Pomology

2. Drip irrigation

3. Stock and Scion

4. Natural methods of propagation

5. Thinning

6. Parthenocarpy

7. Floriculture

8. Cut flowers

9. Trophy

10. Orchids.

Part B (5 × 5 = 25)

Answer **all** questions. Choosing either (a) or (b).

11. (a) Outline the importance of Horticulture.

Or

(b) Illustrate the climate, soil and nutritional need for horticultural crops.

12. (a) Enumerate the types of layering.

Or

(b) State the difference between natural and artificial methods of plant propagation.

13. (a) Write short note on fruit development.

Or

(b) Comment on the cultural practices of sapota.

14. (a) Analyze some common problems associated with the cultivation of Rose.

Or

(b) Construct the methodology of ornamental hedges and foliage plants.

15. (a) Summarize the layout for college garden.

Or

(b) Demonstrate the lawn making and its maintenance.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Elaborate the pest control and plant protection for Horticulture crops.

17. Demonstrate the practices involved in grafting and budding.

18. Analyze the induction of flowering and flower thinning in fruit crops.

19. Enumerate the layout of a model kitchen garden.

20. Write a detail notes on :

    (a) Indoor garden

    (b) Bonsai plants

    (c) Water garden

    (d) Terrace Garden.

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