S–6375

Sub. Code
23MBO1E3

M.Sc. DEGREE EXAMINATION, APRIL 2025

First Semester

Botany

Elective – PHYTOPHARMACOGNOSY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Pharmacognosy
2. Indigenous medicine
3. Terpenoids
4. Secondary metabolites
5. Drug law en-forcement authorities
6. HPLC
7. Carminatives
8. Expectorant
9. Toxic plants
10. Biocides

Part B (5 × 5 = 25)

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

11. (a) Write about the scope of Indigenous system of medicine.

Or

(b) Trace the history of Pharmacognosy.

12. (a) Briefly explain the Amino acid pathway.

Or

(b) Elucidate the Acetate pathway.

13. (a) Give the different types of extraction methods for Plant drugs.

Or

(b) Bring out the significance of Pharmacopoeial standards.

14. (a) Enlist the role of carminative drug in Pharmacognasy.

Or

(b) Explain the functions of Pharmacogenomics.

15. (a) Define 'Biofungicides' ? Write its advantages.

Or

(b) Write an account of the importance of Biopesticides.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Distinguish the various systems of classification of Drugs.

17. Explain in detail about the Shikimate acid pathway.

18. Give an account of modern approaches for quality control of Drugs.

19. Explain the pharmacological action of plant drugs on Central nervous system.

20. Write an essay on Hallucinogenic plants.

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S–6381

Sub. Code
23MBO2C1

M.Sc. DEGREE EXAMINATION, APRIL 2025

Second Semester

Botany

PLANT TAXONOMY OF ANGIOSPERMS AND ECONOMIC BOTANY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Tetradynamous stamen
2. Monochlamydeae
3. Chemosystematics
4. ICN
5. Buckthorn family
6. Obdiplostemonous
7. Bulbet-wood tree
8. Figwort family
9. Oil yielding plants
10. Plants used as beverages

Part B (5 × 5 = 25)

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

11. (a) Briefly explain the Gamble contribution in taxonomy.

Or

(b) Bring out the artificial system of classification.

12. (a) Discuss - Typification.

Or

(b) Write concise notes son Chemosystematics.

13. (a) Describe the characteristic features of Portulaceae.

Or

(b) Elucidate the family characters and economic importance of Vitaceae.

14. (a) Summarize the floral characters of scrophulariaceae.

Or

(b) Highlight the features of Aristolochiaceae.

15. (a) Elaborate the economic importance of Pulses.

Or

(b) Give an account of Oil yielding plants.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Define : Herbarium? Write about the preparation and maintenance of herbarium.

17. Give the organization and significance of ICBN.

18. Describe the characteristics features of Rhamnaceae and its economic importance.

19. Explain the floral characters and economic importance of Sapotaceae.

20. Write short notes on:

    (a) Cereals (b) Essential oils (c) Beverages.

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S–6382

Sub. Code
23MBO2C2

M.Sc. DEGREE EXAMINATION, APRIL 2025

Second Semester

Botany

PLANT ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define : Pits
2. Ring porous wood
3. Polyderm
4. Dehydration
5. Pollen wall
6. Anther tepetum
7. Obturator
8. Endosperm haustoria
9. Scutellum
10. Radicle

Part B (5 × 5 = 25)

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

11. (a) Summarize the Tracheary elements.

Or

(b) Write concise notes on Phloem and it's elements.

12. (a) Describe the normal secondary thickening in Dicots.

Or

(b) Comment on Staining.

13. (a) Explain the development of Anther.

Or

(b) Elaborate structure of Pollen wall.

14. (a) List out the types of Ovule.

Or

(b) What is Endosperm? Explain it's types.

15. (a) Discuss — Polyembryony.

Or

(b) Give short notes on Endosperm.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Give an detailed account on Xylem and it's elements.

17. Write a brief account on anomalous secondary growth in Amaranthaceae.

18. Briefly explain the structure of Male gametophyte and it's development.

19. Explain Female gametophyte.

20. Describe the development of Crucifer type embryo development.

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S–6383

Sub. Code
23MBO2C3

M.Sc. DEGREE EXAMINATION, APRIL 2025

Second Semester

Botany

ECOLOGY PHYTOGEOGRAPHY AND CONSERVATION BIOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Comment on diversity of plant life.
2. What are life forms in ecology?
3. How will you calculate energy flow in an ecosystem?
4. State the laws of thermodynamics.
5. Mention the vegetation types in Tamil Nadu.
6. What do you mean by age-area hypothesis?
7. List out the various threats to biodiversity.
8. Enlist the methods of *in situ* conservation.
9. Define global warming.
10. What are the effects of acid rain?

Part B (5 × 5 = 25)

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

11. (a) Summarize the characteristics and composition of community ecology.

Or

(b) Discuss the scope and basic concepts of ecology.

12. (a) Mention the importance of food chain m ecosystem.

Or

(b) Comment on productivity in ecosystem.

13. (a) Infer the principles of remote sensing.

Or

(b) Explain continental drift theory.

14. (a) Examine the various methods of *ex situ* conservation.

Or

(b) Hotspots are essential for biodiversity – Substantiate.

15. (a) Describe the components and importance of environmental audit.

Or

(b) Brief the causes and effects of ozone depletion.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Elaborate the characteristics and importance of population ecology.

17. Write an essay on renewable and non-renewable energy resources.

18. Explain the various phytogeographical zones of India.

19. Narrate the different categories of IUCN red list.

20. Summarize the methods of solid and e-waste management.

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S–6384

Sub. Code
23MBO2E1

M.Sc. DEGREE EXAMINATION, APRIL 2025

Second Semester

Botany

Elective – MEDICINAL BOTANY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Naturopathy.
2. Umoor-e-tabiya.
3. Phytochemistry.
4. Fluorochromes.
5. *Commiphora.*
6. Cardiotonic.
7. Red list criteria.
8. *In situ* conservation.
9. Ethnobotany.
10. Folk medicines.

Part B (5 × 5 = 25)

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

11. (a) Describe the scope and importance medicinal plants.

Or

(b) Explain the terms of panchamahabhutas and saptadhatu.

12. (a) Write a brief note on principles and methods of histochemistry.

Or

(b) Enlighten the important of phytochemicals and pharmacognosy.

13. (a) Argue that *Terminalia arjuna* is a suitable medication for cardio protection.

Or

(b) Justify that *Catharanthus roseus* is an appropriate drug for anticancer.

14. (a) Why do we need cultivate and conserve the medicinal plants?

Or

(b) Write a policy for conservation and sustainable use of medicinal plants.

15. (a) Exemplify the importance of tribal medicine and folk medicine.

Or

(b) Clarify the distribution of ethnic communities in India.

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

Answer any **three** questions.

16. Compile an in-depth investigation of the historical background of Siddha medicine.

17. Critically comment on adulteration and admixtures.

18. Elucidate the antioxidant and anticancer properties of plants and their uses.

19. How do you conserve endemic and endangered medicinal plants?

20. Write a detail essay on repository of ethnobotanical data.

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S–6387

Sub. Code
23MBO2E4

M.Sc. DEGREE EXAMINATION, APRIL 2025

Second Semester

Botany

Elective – BIOSTATISTICS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Biostatistics?
2. What is a secondary data?
3. Define arithmetic mean.
4. What is standard error'?
5. Define probability.
6. What do you mean by binominal distribution?
7. What is null hypothesis?
8. Define student t test.
9. Define correlation.
10. Define regression.

Part B (5 × 5 = 25)

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

11. (a) Discuss any three methods of sample collection.

Or

(b) Write about the difference between diagram and graphs.

12. (a) Calculate the median for the following frequency distribution.

Class Interval :	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency :	6	5	8	15	7	6	3

Or

(b) Discuss about the steps involved to measure standard deviation.

13. (a) State and prove the Multiplication Theorem of Probability.

Or

(b) Write short note on the patterns of probability distribution.

14. (a) Explain about Student's 't' test.

Or

(b) Discuss about the multivariate analysis of variance.

15. (a) Explain about the various methods of studying correlation.

Or

(b) Write short note on testing the significance of the coefficients of correlation.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss about the graphical representation of data.

17. Explain about the various measures of Dispersion.

18. Explain about the Poisson and Normal distribution.

19. Write the steps for Chi-square test.

20. Explain the concept of regression analysis.

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S–6390

Sub. Code
23MBO2S1

M.Sc. DEGREE EXAMINATION, APRIL 2025

Second Semester

Botany

AGRICULTURE AND FOOD MICROBIOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is the definition of cyanobacteria and examples?
2. Define mycorrhiza with example.
3. List out any two biocontrol agent for plant pathogens.
4. What is Vermicomposting?
5. What is the importance of pH in microbial growth?
6. Give any two name of edible mushroom.
7. What is food intoxication?
8. Define fermented foods and give examples.
9. Define bioprocess
10. Define Pasteurisation.

Part B (5 × 5 = 25)

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

11. (a) Write short note on Mycorrhizal Symbiosis in Nutrient Uptake of crop species.

Or

(b) Explain the role of plant growth promoting microorganism in agriculture sustainability.

12. (a) Describe the approaches to the Biological Control of Insect Pests.

Or

(b) Discuss about the Advantages of Vermicomposting.

13. (a) Write short note on intrinsic factors affecting the growth of microorganisms in food.

Or

(b) What is single cell protein? Give its importance and two examples of SCP.

14. (a) Describe the food preservation processes.

Or

(b) Elaborate the process of butter making.

15. (a) What are the steps in the bioprocessing process?

Or

(b) What latest technology is used in drug design?

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the role of symbiotic bacteria in the nitrogen cycle.

17. Elaborate note on the types of biofertilizer with suitable examples.

18. Explain in detail about the cultivation of common edible mushroom with suitable example.

19. Discuss about the microbial spoilage of milk and milk products.

20. Briefly explain about the various types of food preservation methods with examples.

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S–6391

Sub. Code
23MBO2S2

M.Sc. DEGREE EXAMINATION, APRIL 2025

Second Semester

Botany

BIOPESTICIDE TECHNOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are biopesticides?

2. Explain the environmental benefits of biopesticides.

3. Define bio-fungicides.

4. Name a commonly used bionematicide

5. *Verticillium* wilt.

6. Give any two uses of *Trichoderma*.

7. What is the purpose of standardization in biopesticides?

8. What are the main quality parameters tested for biopesticides?

9. Name one common method used for the mass multiplication of biopesticides.

10. What is one method to improve the efficacy of biopesticides in field conditions?

Part B (5 × 5 = 25)

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

11. (a) Discuss the role and mechanisms of biological control in the context of biopesticides.

Or

(b) Explain the concept of biopesticides.

12. (a) List out the properties and uses of bioinsecticides.

Or

(b) Justify the Neem as a potential biopesticides with respect organic agriculture.

13. (a) Describe the importance of *Bacillus thuringiensis.*

Or

(b) Examine the bioherbicide properties of *Colletotrichum*.

14. (a) Highlight the process of standardization of biopesticides.

Or

(b) Evaluate the methods used for testing the quality parameters of biopesticides.

15. (a) Enumerate some commercially available biopesticide products and their applications.

Or

(b) Evaluate the regulatory requirements for the commercialization of biopesticides.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Analyze the advantages of using biopesticides over conventional chemical pesticides.

17. Examine the mass production technology of biopesticides.

18. Give a detailed essay on *Agrobacteriumradiobacter* as a potential bactericide.

19. Describe the mechanisms of action of two important biopesticides and their target pests.

20. Evaluate the prospects and challenges associated with the commercialization of biopesticides.

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S–6398

Sub. Code
23MBO3E4

M.Sc. DEGREE EXAMINATION, APRIL 2025

Third Semester

Botany

Elective — INDUSTRIAL BOTANY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

Write relevant short notes on :

1. Seaweed liquid fertilizer
2. Kelps
3. Malting
4. Single Cell Proteins
5. Jute
6. Canada Balsam
7. Yoghurt
8. Bioventing
9. Totipotency
10. Macerozyme

Part B (5 × 5 = 25)

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

11. (a) Highlight the contributions of algae to mineral industry.

Or

(b) Illustrate the formation of diatomaceous earth and enumerate its utilization.

12. (a) Explain the various beneficial uses of yeast.

Or

(b) Emphasize the role of fungi in the production of vitamins.

13. (a) Enlist the major tannins and dye yielding plants.

Or

(b) Discuss the economic importance of vegetable oils.

14. (a) Expound the role of microbes in food industry.

Or

(b) Explain how bioleaching is advantageous over other methods.

15. (a) Discuss the strategy of edible vaccine production.

Or

(b) Outline the methods in the production of Bt cotton.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Evaluate the economic importance of phycocolloids.

17. Narrate the critical steps involved in the bioproduction of citric acid.

18. Explain the critical methods in paper production.

19. Give an illustrious account on biogas production.

20. Narrate the procedure in plant cell culture.

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S–6400

Sub. Code
23MBO4C1

M.Sc. DEGREE EXAMINATION, APRIL 2025

Fourth Semester

Botany

PLANT PHYSIOLOGY AND PLANT METABOLISM

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Plasmolysis

2. Diffusion

3. Photorespiration

4. CAM Pathway

5. Glycolysis

6. Respiratory quotient.

7. Auxins

8. Phytochrome

9. Plant senescence

10. Circadian rhythm.

Part B (5 × 5 = 25)

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

11. (a) Elucidate the mechanism of water absorption by plant roots.

Or

(b) Illustrate the stomatal apparatus with their role in transpiration.

12. (a) Explain the process of photophosphorylation.

Or

(b) Differentiate the photosystem I and photosystem II.

13. (a) Describe the enzymatic reactions involved in Glycolysis.

Or

(b) Highlight the Cyanide resistant respiration.

14. (a) Give an account on various types of Auxins and their role in plants physiology.

Or

(b) Write a brief note on Photoperiodism.

15. (a) Provide an elaborate account of plant senescence and abscission.

Or

(b) Analyze the plant responses to their environmental stress.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Examine the path of translocation of organic solutes in plants.

17. Write a critical account on CAM pathway and its significance.

18. Elucidate the steps involved in oxidative decarboxylation of pyruvic acid with reference to assimilatory power production.

19. Interpret the mechanisms of vernalization and its concept for induce flowering.

20. Write an elaborate account of biochemical, physiological, and regulatory mechanisms for fruit ripening.

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S–6401

Sub. Code
23MBO4C2

M.Sc. DEGREE EXAMINATION, APRIL 2025

Fourth Semester

Botany

BIOCHEMISTRY AND APPLIED BIOTECHNOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define pH.
2. What is enthalpy and its formula?
3. What is the basic structure of an amino acid?
4. What is lipoprotein?
5. Define Allosteric enzymes.
6. What you meant by terpenoids with some examples.
7. Define terminator seed technology.
8. What is miRNA technology?
9. What is Biotransformants?
10. Define Bioremediation.

Part B (5 × 5 = 25)

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

11. (a) Write a short note on ionic and covalent bond with suitable examples.

Or

(b) Derive Henderson - Hasselbalch Equation.

12. (a) Discuss about the secondary structure protein.

Or

(b) Explain about the phospholipids and Glycolipids with examples.

13. (a) Elaborate note on the factors affecting enzyme action.

Or

(b) Describe about the chemical nature and its role of glycosides.

14. (a) Write short note on virus induced gene silencing.

Or

(b) Discuss about the plants as factories for useful products and give some examples.

15. (a) Explain in detail about the production of amylase.

Or

(b) Describe about the in situ and ex-situ bioremediation.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Briefly discusses about the first law of thermodynamics.

17. Explain about classification of carbohydrates with suitable examples.

18. Discuss about the mechanism of enzyme action.

19. What technology was used to create flavr Savr tomato and describe how it works?

20. Describe about the production of Glutamic acid production.

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S–6402

Sub. Code
23MBO4E1

M.Sc. DEGREE EXAMINATION, APRIL 2025

Fourth Semester

Botany

Elective — ORGANIC FARMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Explain NPOP.
2. Pancha Kavya.
3. Vermicompost.
4. Biofertilizer.
5. Give any two cultural methods for insect-pest disease management.
6. Fungal biocontrol agent.
7. Differentiate organic and non organic products.
8. Storage of organic products.
9. Quality control agencies.
10. Grading of organic products.

Part B (5 × 5 = 25)

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

11. (a) Describe the principles and types of organic farming in India.

Or

(b) Examine the concept of dryland agronomy practices.

12. (a) List out the significance of biofertilizers.

Or

(b) Highlight the organic farming practiêes for improving the soil health.

13. (a) Provide suggestions for the land management in organic farming.

Or

(b) Enumerate the weed and nutrient management in organic farming.

14. (a) Evaluate the post-harvest process of organic produce.

Or

(b) Explain the process of labelling of organic produce.

15. (a) Review the process of quality control certification process and procedure.

Or

(b) Explore the quality aspect and grading of organic products.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Provide a detailed evaluation of operational structure of NPOP.

17. Identify the quality parameters of organic manures and its specifications.

18. Examine the identification of different fungal and bacterial biocontrol agents.

19. Summarize the storage and transport of organic produce.

20. Investigate the export of organic product and marketing.

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S–6405

Sub. Code
23MBO4S1

M.Sc. DEGREE EXAMINATION, APRIL 2025

Fourth Semester

Botany

BOTANY FOR ADVANCED RESEARCH

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Central dogma.
2. Transcription.
3. How is next-generation sequencing (NGS) utilized in molecular taxonomy?
4. What role do molecular markers play in studying reproductive strategies?
5. How does the CLAVATA pathway influence meristem function?
6. Differentiate aerobic and anaerobic respiration.
7. How are enzymes named according to their function?
8. What is the effect of pH on enzyme function?
9. How does coffee production contribute to the economies of developing countries?
10. What is the significance of oil palm in the global market?

Part B (5 × 5 = 25)

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

11. (a) Describe the RNA splicing in eukaryotes.

Or

(b) Explain the significance of transcriptome.

12. (a) Examine the chemotaxonomic characters and their significance for systematics.

Or

(b) Clarify the Cladistics and Phenetics.

13. (a) Write a short note on ABCD model in Arabidopsis flower.

Or

(b) Discuss the role of auxins on root formation.

14. (a) Elaborate the mechanism of enzyme action.

Or

(b) Summarize the classification of enzymes with appropriate examples.

15. (a) Analyze the commercial significance of cereals.

Or

(b) Provide the economic importance of vegetables.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Infer the mechanism of translation and discuss the steps involved.

17. Investigate the molecular systematics in crop evolution.

18. Explore the gene expression methods during leaf, root and flower development.

19. Discuss in detail about importance and properties of enzymes in biological sciences.

20. Write a detailed essay on economic importance of oil yielding plants.

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S–6406

Sub. Code
23MBO4S2

M.Sc. DEGREE EXAMINATION, APRIL 2025

Fourth Semester

Botany

FARM SCIENCES — GREEN WEALTH

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. List out the methods for seed sowing.

2. Provide the causes of water logging conditions.

3. Name any two herbicides for weed management.

4. Define allelopathy.

5. What is a key characteristic used to identify corn seeds?

6. Name two weeds that are commonly problematic in rice paddies.

7. Name one common method used to test seed viability.

8. What device is commonly used to measure the flow rate of irrigation water?

9. How can tomatoes be kept fresher for longer?

10. Explain the storage methods of leafy vegetables.

Part B (5 × 5 = 25)

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

11. (a) Analyze the steps involved in the tillage and tilth.

Or

(b) Explain the significance of crop nutrition.

12. (a) Write a brief note on crop - weed competition.

Or

(b) Enlighten the principles of crop rotation and their significance.

13. (a) Discuss the physiological and environmental factors that influence the relationship between sowing depth and seedling emergence.

Or

(b) Discuss the economic and ecological impacts of weed infestations in agricultural fields.

14. (a) Summarize the importance of using a leveler in field preparation.

Or

(b) Analyze the factors affecting soil infiltration rate.

15. (a) Describe the physiological disorders of bulb crops.

Or

(b) Explain the methods to adapt the harvest and storage of radish and carrot.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Examine the efficient utilization of water through soil and crop management practices.

17. Discuss in detail about concept, principles and methods of weed management.

18. Analyze the different types of fertilizers, their nutrient compositions, and the criteria for selecting appropriate fertilizers for specific crops.

19. Investigate the different methods used to test seed germination and viability.

20. Infer the harvest, storage, physiological disorders of Turmeric and Ginger.

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