

# MAHATMA GANDHI UNIVERSITY, KOTTAYAM

## MGU-UGP (Honours) Examination

FIFTH SEMESTER  
(2024 ADMISSION ONWARDS)

Course Code: **MG5DSCBOT300, MG5DSCBBT300**

Course Title: **ANGIOSPERM SYSTEMATICS AND ECONOMIC BOTANY**

**Time: 1 hour 30 minutes**

**Maximum Marks: 50**

***Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)***

Student should attempt at least one question from each course outcome to enhance their overall outcome attainability

### Part A

#### Short answers

Answer **ten** questions

Each question carries **1** mark

| Questions                                                              | Taxonomy   | CO |
|------------------------------------------------------------------------|------------|----|
| 1. What is phyllotaxy?                                                 | Understand | 3  |
| 2. Name the two types of monochasial cyme.                             | Remember   | 3  |
| 3. What is descendingly imbricate aestivation?                         | Understand | 3  |
| 4. Expand APG.                                                         | Remember   | 2  |
| 5. List out any two online taxonomic databases.                        | Remember   | 5  |
| 6. Define holotype.                                                    | Understand | 1  |
| 7. What are taxonomic keys?                                            | Understand | 1  |
| 8. Comment on the peculiarity of androecium in Malvaceae.              | Understand | 3  |
| 9. Name any two economically important plants in Cucurbitaceae.        | Remember   | 3  |
| 10. List out any two distinguishing floral features of Orchidaceae.    | Understand | 3  |
| 11. Write the binomial of Ragi.                                        | Remember   | 2  |
| 12. How do the useful parts of cotton and coir differ morphologically? | Understand | 2  |

**[1x10 = 10]**

### Part B

#### Short Essay

Answer **six** Questions

Each question carries **5** marks

|                                                                           |            |   |
|---------------------------------------------------------------------------|------------|---|
| 13. Differentiate cyathium and hypanthodium inflorescences with examples. | Analyze    | 3 |
| 14. Compare dry dehiscent and dry indehiscent fruits .                    | Understand | 3 |

|                                                                                                          |            |   |
|----------------------------------------------------------------------------------------------------------|------------|---|
| 15. Briefly explain the steps in preparation of herbarium.                                               | Understand | 4 |
| 16. Explain the principles of the International Code of Nomenclature (ICN).                              | Understand | 1 |
| 17. Briefly outline B & H system of classification.                                                      | Understand | 2 |
| 18. List out the advanced features of Asteraceae.                                                        | Understand | 3 |
| 19. Explain the salient characters of Lamiaceae.                                                         | Understand | 3 |
| 20. Write the binomial, family and morphology of useful part of the following plants- (a) Carrot (b) Tea | Remember   | 2 |

**[5x6 = 30]**

### Part C

#### Essay

Answer **any one** question

Each question carries **10** marks

|                                                                                      |            |   |
|--------------------------------------------------------------------------------------|------------|---|
| 21. Briefly explain different types of racemose inflorescences with examples.        | Understand | 3 |
| 22. Compare vegetative and floral characters of the three subfamilies of Leguminosae | Analyze    | 3 |

**[10x1 = 10]**

MAHATMA GANDHI UNIVERSITY, KOTTAYAM  
MGU-UGP (HONOURS)  
FIFTH SEMESTER EXAMINATION  
(2024 ADMISSION ONWARDS)

Course Code: **MG5DSCBOT301**    Course Title: **Plant Cell and Molecular Biology**

Time: 1.5 Hrs

Maximum Marks: 50

*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create*  
*Student should attempt at least one question from each course outcome to enhance their*  
*overall outcome attainability*

Part A: Very Short Answer Questions

Answer 10 questions

Each question carries 1 mark

| Questions                                                            | Taxonomy   | CO |
|----------------------------------------------------------------------|------------|----|
| 1. Name any two evolutionarily conserved proteins present in plants. | Remember   | 5  |
| 2. What are split genes?                                             | Remember   | 6  |
| 3. Who proposed the term “Cell”?                                     | Remember   | 1  |
| 4. Mention any two functions of Lysosome.                            | Remember   | 2  |
| 5. Explain the major functions of SER.                               | Understand | 2  |
| 6. Comment on the significance of DNA repair in cells.               | Evaluate   | 6  |
| 7. What are the major components in cytoskeleton?                    | Understand | 2  |
| 8. What are Dictyosomes?                                             | Remember   | 2  |
| 9. Explain missense mutations.                                       | Evaluate   | 6  |
| 10. What is telomere?                                                | Understand | 3  |
| 11. What are the functions of nucleolus?                             | Understand | 3  |
| 12. Mention any two characteristic features of Z DNA.                | Understand | 5  |

Part B: Short answer Questions

Answer 6 questions

Each question carries 5 marks

|                                                                                                        |            |   |
|--------------------------------------------------------------------------------------------------------|------------|---|
| 13. Write a comparative account on different types of RNA.                                             | Analyze    | 5 |
| 14. Describe the organization of DNA into chromosomes.                                                 | Understand | 3 |
| 15. Evaluate the roles of major enzymes involved in prokaryotic DNA replication.                       | Evaluate   | 6 |
| 16. Compare the structural and functional characteristics of heterochromatin and euchromatin           | Understand | 3 |
| 17. Describe the structural organization of plasma membrane.                                           | Understand | 2 |
| 18. Analyze the molecular mechanisms involved in apoptosis.                                            | Analyze    | 5 |
| 19. Justify the significance of meiosis in the plant kingdom.                                          | Analyze    | 5 |
| 20. Explain the mechanism of gene regulation in prokaryotes by operon model, using a suitable example. | Evaluate   | 4 |

Part C: Essay Questions  
Answer 1 question  
Each question carries 10 marks

- |     |                                                                                                                                              |            |   |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------|------------|---|
| 21. | Describe the structure and major functions of semi-autonomous organelles, and explain why they are referred as “semi-autonomous” organelles. | Understand | 2 |
| 22. | Describe the molecular mechanism of translation in prokaryotes.                                                                              | Understand | 6 |

# MAHATMA GANDHI UNIVERSITY, KOTTAYAM

## MGU-UGP (HONOURS) FIFTH SEMESTER EXAMINATION (2024 ADMISSION ONWARDS)

Course Code: **MG5DSEBOT300** Course Title: **Plant breeding and plant genetic resources**

**Time:** 2 Hrs

**Maximum Marks:** 70

*Taxonomy Levels:* Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I), and Appreciation (Ap)

*Student should attempt at least one question from each course outcome to enhance their overall outcome attainability.*

### **Part A: Very Short Answer Type Questions**

*Answer any 10 questions. Each question carries 2 marks*

| No.             | Question                                                                                                             | Taxonomy   | CO |
|-----------------|----------------------------------------------------------------------------------------------------------------------|------------|----|
| 1               | Who proposed the Centres of Origin of Cultivated Plants?                                                             | Remember   | 1  |
| 2               | Expand ICAR and NBRI.                                                                                                | Remember   | 1  |
| 3               | Define acclimatization in plant introduction.                                                                        | Remember   | 2  |
| 4               | Which plant breeding method would you choose to develop disease-resistant lines from a local heterogeneous landrace? | Apply      | 2  |
| 5               | What is meant by mutation breeding?                                                                                  | Understand | 2  |
| 6               | Define heterosis.                                                                                                    | Remember   | 3  |
| 7               | Mention any two harmful effects of inbreeding depression.                                                            | Understand | 3  |
| 8               | Name any two traditional rice varieties cultivated in Kerala.                                                        | Remember   | 4  |
| 9               | Write the binomial and common name of any one spice plant mentioned in your syllabus.                                | Remember   | 4  |
| 10              | Give the common name and identify the edible part of <i>Artocarpus hirsutus</i> .                                    | Apply      | 4  |
| 11              | Define deforestation as a threat to plant genetic resources.                                                         | Understand | 5  |
| 12              | Name two <i>in-situ</i> conservation methods.                                                                        | Remember   | 5  |
| (10×2=20 marks) |                                                                                                                      |            |    |

### **Part B: Short Answer Type Questions**

*Answer any 8 questions. Each question carries 5 marks*

|    |                                                                               |          |   |
|----|-------------------------------------------------------------------------------|----------|---|
| 13 | Write a brief note on the significance of plant breeding in crop improvement. | Remember | 1 |
|----|-------------------------------------------------------------------------------|----------|---|

|                |                                                                                                            |            |   |
|----------------|------------------------------------------------------------------------------------------------------------|------------|---|
| 14             | Mention the location and major crop achievements of CPCRI and CTCRI in Kerala.                             | Understand | 1 |
| 15             | Briefly explain the basic steps involved in the plant introduction procedure.                              | Understand | 2 |
| 16             | Outline the procedure of artificial hybridization and explain how emasculation prevents self-pollination.  | Apply      | 2 |
| 17             | What is polyploidy breeding? Mention its applications in crop plants.                                      | Understand | 2 |
| 18             | Explain the Dominance hypothesis of heterosis.                                                             | Understand | 3 |
| 19             | Outline the procedure of the Pedigree breeding method.                                                     | Understand | 3 |
| 20             | Discuss the role of traditional knowledge in conserving plant genetic resources.                           | Apply      | 4 |
| 21             | List the binomial, family, and economic uses of <i>Averrhoa carambola</i> and <i>Sauropus androgynus</i> . | Remember   | 4 |
| 22             | Briefly describe Major threats to the genetic resources.                                                   | Understand | 5 |
| (8×5=40 marks) |                                                                                                            |            |   |

### Part C: Essay Type Questions

*Answer any 1 question. Question carries 10 marks*

|                 |                                                                                                                      |            |   |
|-----------------|----------------------------------------------------------------------------------------------------------------------|------------|---|
| 23              | Explain the following breeding methods with their merits and demerits: (a) Mass selection, and (b) Clonal selection. | Understand | 2 |
| 24              | Describe the major <i>in-situ</i> and <i>ex-situ</i> methods used for the conservation of plant genetic resources.   | Understand | 5 |
| (1×10=10 marks) |                                                                                                                      |            |   |

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**MGU-UGP (HONOURS)**  
**FIFTH SEMESTER EXAMINATION**  
**(2024 ADMISSION ONWARDS)**  
**Course Code: MG5DSEBOT301**

**Course Title: Phytogeography, Forestry and Ecotourism**

**Time: 2 Hrs**

**Maximum Marks: 70**

**Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C),  
Skill (S), Interest (I) and Appreciation (Ap)**

**Student should attempt at least one question from each Course Outcome to enhance  
their overall outcome attainability.**

Part A:

**Very Short Answer Questions**

**Answer 10 questions**

**Each question carries 2 marks**

- |                                                                             |              |   |
|-----------------------------------------------------------------------------|--------------|---|
| 1. What is remote sensing?                                                  | Remember     | 2 |
| 2. Define edaphic factors.                                                  | Remember     | 2 |
| 3. What is endemic distribution?                                            | Remember     | 1 |
| 4. Define the migration hypothesis.                                         | Remember     | 1 |
| 5. What is meant by long-distance dispersal?                                | Remember     | 1 |
| 6. Define the age-area hypothesis.                                          | Remember     | 1 |
| 7. What is meant by biotic factors?                                         | Remember     | 1 |
| 8. Define sustainable forest management.                                    | Remember     | 3 |
| 9. Mention the importance of heritage ecotourism in conservation.           | Appreciation | 5 |
| 10. State the importance of wildlife tourism in wildlife conservation.      | Appreciation | 5 |
| 11. Mention the importance of community participation in ecotourism.        | Appreciation | 5 |
| 12. State the significance of India's first planned ecotourism destination. | Appreciation | 5 |

Part B:  
**Short Answer Type Questions**  
**Answer 8 Questions**  
**Each question carries 5 marks**

- |                                                                                                                                  |              |   |
|----------------------------------------------------------------------------------------------------------------------------------|--------------|---|
| <b>13.</b> Explain the positive and negative interactions among plants with suitable examples.                                   | Understand   | 2 |
| <b>14.</b> Describe the physical and chemical properties of soil and their influence on plants.                                  | Understand   | 2 |
| <b>15.</b> Explain the major climatic factors affecting plant growth and distribution.                                           | Understand   | 2 |
| <b>16.</b> Describe the anatomical and physiological adaptations of plants to their environment.                                 | Understand   | 2 |
| <b>17.</b> Explain the role of remote sensing and GIS in ecological studies.                                                     | Understand   | 2 |
| <b>18.</b> Give an account of Joint Forest Management.                                                                           | Understand   | 3 |
| <b>19.</b> Explain the principles and practices of silviculture.                                                                 | Understand   | 4 |
| <b>20.</b> Describe the major threats to forest biodiversity and suggest suitable conservation measures.                         | Understand   | 4 |
| <b>21.</b> Discuss the significance of the positive and negative impacts of ecotourism on the environment and local communities. | Appreciation | 5 |
| <b>22.</b> Discuss the importance of Thattekad as an ecotourism destination for biodiversity conservation.                       | Appreciation | 5 |

Part C:  
**Essay Type Questions**  
**Answer any one question**  
**Each Question carries 10 marks**

- |                                                                                                                       |            |   |
|-----------------------------------------------------------------------------------------------------------------------|------------|---|
| <b>23.</b> Explain the major aquatic and terrestrial biomes of the world, highlighting their characteristic features. | Understand | 1 |
| <b>24.</b> Describe the major forest types of India and explain their characteristic features.                        | Understand | 3 |

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP (HONOURS)**  
**FIFTH SEMESTER EXAMINATION**  
**(2024 ADMISSION ONWARDS)**

Course Code: **MG5DSEBOT302, MG5DSEBBT300**  
Course Title: **PLANT BIOTECHNOLOGY**

Time: **2 Hrs**

Maximum Marks: **70**

*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

*Student should attempt at least one question from each course outcome to enhance their overall outcome attainability*

**Part A: Very Short Answer Questions**

Answer 10 questions

Each question carries 2 marks

| Questions                                                              | Taxonomy   | CO |
|------------------------------------------------------------------------|------------|----|
| 1. Name two common sterilization methods used in plant tissue culture. | Understand | 1  |
| 2. Mention a feature of golden rice.                                   | Remember   | 5  |
| 3. What are edible vaccines?                                           | Understand | 5  |
| 4. Differentiate cDNA library from genomic library.                    | Understand | 3  |
| 5. Name an organism involved in the bioremediation.                    | Understand | 5  |
| 6. What is synthetic biology?                                          | Remember   | 5  |
| 7. Define plasmid.                                                     | Understand | 2  |
| 8. Examine the peculiarities of climate resilient crops.               | Remember   | 5  |
| 9. Explain totipotency.                                                | Understand | 1  |
| 10. Expand YAC.                                                        | Understand | 2  |
| 11. What is electroporation?                                           | Remember   | 4  |
| 12. What are molecular scissors?                                       | Understand | 2  |
| (2 X 10 = 20)                                                          |            |    |

**Part B: Short answer Questions**

Answer 8 questions

Each question carries 5 marks

|                                                                               |            |   |
|-------------------------------------------------------------------------------|------------|---|
| 13. Write short notes on sterilization methods                                | Apply      | 1 |
| 14. How transformants are screened by alpha-complementation?                  | Understand | 3 |
| 15. Describe any two applications of biotechnology.                           | Understand | 5 |
| 16. Differentiate electroporation from microinjection.                        | Analyse    | 4 |
| 17. What are cybrids? How they are obtained?                                  | Understand | 1 |
| 18. Describe the features of CRISPR- Cas9 gene editing tool.                  | Apply      | 5 |
| 19. Explain the features of Ti plasmid.                                       | Understand | 2 |
| 20. Examine the role of reporter genes in the selection of transgenic plants. | Apply      | 4 |
| 21. How synthetic biology helps in plant metabolic engineering?               | Understand | 5 |
| 22. Explain bacterial transformation.                                         | Apply      | 3 |

(5 X 8 = 40)

Part C: Essay Questions  
Answer 1 question  
Each question carries 10 marks

- |     |                                                                                                                                                               |            |   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---|
| 23. | What is rDNA technology? Elaborate its steps.                                                                                                                 | Understand | 3 |
| 24. | Explain the principle and procedure of micropropagation.<br>Discuss how micropropagation contributes to the rapid<br>multiplication of elite plant varieties. | Understand | 1 |

(10 X 1 = 10)

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**

**MGU-UGP (HONOURS)**

**FIFTH SEMESTER EXAMINATION**

**(2024 ADMISSION ONWARDS)**

Course Code: **MG5DSEBOT303, MG5DSEBBT301**

Course Title: **GREEN TECHNOLOGY AND SUSTAINABLE DEVELOPMENT**

**Time: 2 Hrs.**

**Maximum Marks: 70**

***Remember (K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I) and Appreciation(Ap)***

*Student should attempt at least one question from each course outcome to enhance their overall outcome attainability*

**Part A**

Very Short Answer Questions

Answer any **10** questions

Each question carries **2** marks

|                                                  | <b>Taxonomy</b> | <b>CO</b> |
|--------------------------------------------------|-----------------|-----------|
| 1. What is meant by green chemistry??            | [U]             | [1]       |
| 2. Define sustainable development.               | [K]             | [3]       |
| 3. Define carbon credits.                        | [K]             | [2]       |
| 4. What is meant by the Zero Waste concept??     | [U]             | [2]       |
| 5. What is ISO 14001:2019?                       | [K]             | [4]       |
| 6. Define Environmental Impact Assessment.       | [U]             | [4]       |
| 7. What is meant by renewable energy gadgets?    | [K]             | [1,5]     |
| 8. What is Eco-mark certification??              | [U]             | [5]       |
| 9. Define green technology.                      | [U]             | [1]       |
| 10. What is phyto-nanotechnology?                | [C]             | [2]       |
| 11. What is meant by green belt?                 | [K]             | [5]       |
| 12. Mention any two benefits of green buildings. | [K]             | [5]       |

**[2×10=20]**

**Part B**

Short Answer Questions

Answer any **8** questions

Each question carries **5** marks

- |     |                                                                                           |      |     |
|-----|-------------------------------------------------------------------------------------------|------|-----|
| 13. | Explain the importance and applications of green technology.                              | [K]  | [1] |
| 14. | Describe the major green technology initiatives in India.                                 | [U]  | [1] |
| 15. | Explain microwave-assisted synthesis and supercritical fluid extraction as green methods. | [U]  | [1] |
| 16. | Discuss Reduce, Reuse and Recycle as strategies for sustainable waste management.         | [U]  | [2] |
| 17. | Describe bioremediation and analyse its significance in environmental management.         | [An] | [2] |
| 18. | Describe the scope and goals of Life Cycle Analysis.                                      | [U]  | [4] |
| 19. | Discuss water conservation and water audit as green practices.                            | [K]  | [5] |
| 20. | Write a note on solar energy and wind energy as renewable energy sources.                 | [K]  | [3] |
| 21. | Discuss the social, economic and environmental dimensions of sustainability.              | [K]  | [3] |
|     | Explain the role of governmental bodies in green planning.                                |      |     |
| 22. |                                                                                           | [K]  | [5] |

**[5×8=40]**

### **Part C**

Essay Questions

Answer any **1** question

Each question carries **10** marks

- |    |                                                                                                                                                     |     |     |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|
| 23 | Explain the twelve principles of green chemistry. Discuss the importance and applications of green technology in achieving sustainable development. | [K] | [1] |
| 24 | Discuss LEED certification, Eco-mark certification in India, green cities, green belts and the role of governmental bodies in green planning.       | [U] | [5] |

**[10×1=10]**

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP (HONOURS)**  
**FIFTH SEMESTER EXAMINATION**  
**(2024 ADMISSION ONWARDS)**

Course Code: **MG5DSEBOT304, MG5DSEBBT302**  
Course Title: **ANALYTICAL TECHNIQUES IN PLANT SCIENCE**

**Duration: 2 Hrs**

**Maximum Marks: 70**

***Remember(K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I) and Appreciation(Ap)***

*Student should attempt at least one question from each course outcome to enhance their overall outcome attainability*

**Part A:**

**Very Short Answer Questions**

Answer 10 questions

Each question carries 2 mark

| Questions                                                     | Taxonomy   | CO |
|---------------------------------------------------------------|------------|----|
| 1 What is meant by maceration of plant tissue?                | Remember   | 1  |
| 2 Define fixation in microtechnique.                          | Remember   | 1  |
| 3 Mention the composition of FAA.                             | Remember   | 1  |
| 4 Name any two vital stains used in plant microtechnique.     | Remember   | 1  |
| 5 What is the role of a mounting medium in slide preparation? | Understand | 1  |
| 6 State one use of Scanning Electron Microscopy in Botany.    | Remember   | 3  |
| 7 Define spectrophotometer.                                   | Remember   | 2  |
| 8 What is meant by UV-visible spectroscopy?                   | Remember   | 3  |
| 9 Expand FTIR.                                                | Remember   | 2  |
| 10 Define lyophilization.                                     | Remember   | 2  |
| 11 Define Rf value in chromatography.                         | Remember   | 4  |
| 12 Define electrophoretic mobility.                           | Remember   | 2  |
| <b>(2 x 10 = 20)</b>                                          |            |    |

**Part B:**

**Short Answer Questions**

Answer 8 Questions

Each question carries 5 marks

|                                                                                                        | Taxonomy   | CO |
|--------------------------------------------------------------------------------------------------------|------------|----|
| 13 Explain the purpose and procedure of single and double staining in plant microtechnique.            | Understand | 1  |
| 14 Differentiate between rotary and sledge microtomes.                                                 | Understand | 2  |
| 15 Describe squash and smear preparation                                                               | Understand | 1  |
| 16 Outline the procedure for adjusting the pH of a solution using a pH meter, and state its principle. | Apply      | 5  |
| 17 State Beer-Lambert's Law. Describe the principle of photometric analysis.                           | Understand | 2  |
| 18 Explain the procedure for enumeration of cells using a haemocytometer.                              | Apply      | 4  |
| 19 Explain the principle of centrifugation and enumerate the types of centrifuges.                     | Understand | 2  |

|                     |                                                           |            |   |
|---------------------|-----------------------------------------------------------|------------|---|
| 20                  | Explain the procedure of thin layer chromatography (TLC). | Understand | 3 |
| 21                  | Describe the applications of HPLC in plant science.       | Understand | 3 |
| 22                  | Explain the working and applications of SDS-PAGE.         | Understand | 3 |
| <b>(5 x 8 = 40)</b> |                                                           |            |   |

**Part C:**  
**Essay Questions**  
 Answer any one question  
 Question carries 10 marks

|    |                                                                                                                                                    | <b>Taxonomy</b> | <b>CO</b> |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| 23 | Describe the steps involved in the preparation of permanent slides.                                                                                | Understand      | 1         |
| 24 | Explain the basic principle and working mechanism of light microscopy and summarise the applications of light microscopy in plant science research | Understand      | 2,3       |

**(10 x 1=10)**

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP (HONOURS)**  
**FIFTH SEMESTER EXAMINATION**  
**(2024 ADMISSION ONWARDS)**

Course Code: **MG5DSEBOT305, MG5DSEBBT303**  
Course Title: **CLIMATE CHANGE AND DISASTER MANAGEMENT-BOTANICAL PERSPECTIVE**

Time: **2 Hrs**

Maximum Marks: **70**

*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S),  
Interest (I) and Appreciation (Ap)*

*Student should attempt at least one question from each course outcome to enhance their overall outcome attainability*

**Part A: Very Short Answer Questions**

Answer 10 questions

Each question carries 2 marks

| Questions                                                           | Taxonomy   | CO |
|---------------------------------------------------------------------|------------|----|
| 1. Give two examples of greenhouse gases                            | Understand | 1  |
| 2. Define climate.                                                  | Remember   | 1  |
| 3. Explain reforestation.                                           | Understand | 5  |
| 4. What is the importance of Paris agreement?                       | Remember   | 3  |
| 5. Why wetlands are known as kidneys of the Earth?                  | Understand | 5  |
| 6. Define food security.                                            | Remember   | 2  |
| 7. Explain global warming.                                          | Understand | 2  |
| 8. Name a mangrove.                                                 | Remember   | 5  |
| 9. What is carbon foot print?                                       | Understand | 1  |
| 10. Mention a cause of biodiversity shift.                          | Understand | 2  |
| 11. What is renewable energy?                                       | Remember   | 3  |
| 12. Write an example of heat related illness due to climate change. | Understand | 2  |
| (2 X 10 = 20)                                                       |            |    |

**Part B: Short answer Questions**

Answer 8 questions

Each question carries 5 marks

|                                                                                                    |            |   |
|----------------------------------------------------------------------------------------------------|------------|---|
| 13. Explain different types of geological disasters.                                               | Apply      | 1 |
| 14. What are the adaptive mechanisms found in plants to mitigate the climate change?               | Understand | 3 |
| 15. Evaluate the role of ecosystem restoration and conservation in reducing disaster risks.        | Analyze    | 5 |
| 16. How ozone formation and depletion occur?                                                       | Understand | 1 |
| 17. What are the anthropogenic factors responsible for climate change?                             | Understand | 1 |
| 18. Examine the role of rehabilitation, reconstruction, and restoration in post disaster recovery. | Apply      | 5 |
| 19. Explain the impacts of global warming?                                                         | Understand | 2 |
| 20. Write the importance of early warning systems in disaster preparedness.                        | Apply      | 4 |
| 21. Climate change affects human health. Justify.                                                  | Evaluate   | 2 |
| 22. Explain the international efforts and policies to mitigate the climate change.                 | Apply      | 3 |

(5 X 8 = 40)

Part C: Essay Questions  
Answer 1 question  
Each question carries 10 marks

- |     |                                                                  |            |               |
|-----|------------------------------------------------------------------|------------|---------------|
| 23. | Explain the mitigation strategies to control the climate change. | Understand | 3             |
| 24. | Describe different types of natural disasters.                   | Understand | 1             |
|     |                                                                  |            | (10 X 1 = 10) |

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP (HONOURS) REGULAR EXAMINATION**  
**FIFTH SEMESTER EXAMINATION**  
**(2024 ADMISSION ONWARDS)**

Course Code: **MG5SECBOT300, MG5SECBBT300** Course Title: **MUSHROOM PRODUCTION AND VALUE ADDITION**

**Duration: 1 hour 30 minutes**

**Maximum Marks: 50**

***Remember(K), Understand(U), Apply(A), Analyse (An), Evaluate(E), Create(C), Skill(S), Interest(I) and Appreciation (Ap)***

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

**Part A**

Short Answer Questions

Answer any **10** questions

Each question carries **1** mark

**Taxonomy CO**

- |                                                                       |         |
|-----------------------------------------------------------------------|---------|
| 1. What is pileus?                                                    | [K] [1] |
| 2. What is spawn?                                                     | [K] [2] |
| 3. What is PDA?                                                       | [K] [4] |
| 4. Mention one use of spent mushroom substrate.                       | [K] [2] |
| 5. Name one common pest of cultivated mushrooms.                      | [K] [1] |
| 6. Mention one method of preserving mushrooms after harvest.          | [K] [3] |
| 7. What is mushroom value addition?                                   | [K] [3] |
| 8. Why is proper ventilation necessary in a mushroom house?           | [U] [2] |
| 9. Mention one requirement for spawn preparation.                     | [K] [2] |
| 10. What is meant by pure culture?                                    | [K] [4] |
| 11. Name the substrate commonly used for cultivating oyster mushroom. | [K] [2] |
| 12. What is meant by disease management in mushroom cultivation?      | [K] [1] |
| <b>(10 x 1 =10)</b>                                                   |         |

**Part B**

Short Essay Questions

Answer any **6** questions

Each question carries **5** marks

- |                                                                                      |          |
|--------------------------------------------------------------------------------------|----------|
| 13. Evaluate the major problems affecting successful mushroom cultivation.           | [E] [4]  |
| 14. Describe the preparation of mushroom soup powder .                               | [U] [3]  |
| 15. Describe the basic requirements for successful mushroom cultivation.             | [U] [2]  |
| 16. Compare and evaluate the commonly used nutrient media for mushroom pure culture. | [E] [4]  |
| 17. Describe the anti-tumour effects of mushrooms.                                   | [U] [2]  |
| 18. Describe the different parts of a typical mushroom.                              | [U] [1]  |
| 19. Analyse the major marketing strategies used for promoting mushroom products.     | [An] [5] |
| 20. Describe the general characters of mushrooms.                                    | [U] [1]  |
| <b>(6 x 5 =30)</b>                                                                   |          |

**Part C**

Essay Questions

Answer any **1** question

Each question carries **10** marks

- |                                                                 |         |
|-----------------------------------------------------------------|---------|
| 21. Describe the nutritional profile of mushrooms.              | [U] [2] |
| 22. Discuss the scope and significance of mushroom cultivation. | [U] [1] |
| <b>(1 x 10 =10)</b>                                             |         |