

QPCode **Reg.No** :
Name :

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS REGULAR /IMPROVEMENT/ REAPPEARANCE
EXAMINATION OCTOBER 2026
FIFTH SEMESTER

Discipline Specific Course(DSC)-MG5DSCMBG300-AGRICULTURAL MICROBIOLOGY
(2024 ADMISSION ONWARDS)

Duration: 1.5 hours

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 Notes Questions

Answer any **10** questions

Each question carries **2** marks

1. What type of microbial interaction benefits one species while the other is unaffected? [K] / [CO1]
2. What is the photosynthetic partner of a lichen called? [K] / [CO1]
3. Explain amensalism. [U] / [CO1]
4. What type of mycorrhiza forms intracellular structures such as arbuscules inside root cells? [K] / [CO1]
5. List any two importance of phyllosphere microflora. [An] / [CO2]
6. Identify any two siderophore producing bacteria. [A] / [CO2]
7. Point out any two importance of carbon cycle. [An] / [CO2]
8. Give any two examples of endophytic bacteria. [U] / [CO2]
9. Identify the pathogen responsible for crown gall disease. [A] / [CO3]

- | | |
|---|-------------|
| 10. Define IPM. | [K] / [CO3] |
| 11. What are elicitors? | [K] / [CO3] |
| 12. Give one example for a symbiotic nitrogen fixing biofertilizer. | [U] / [CO3] |

[2x10 = 20]

Part B

Short Essay Questions

Answer any **4** questions

Each question carries **5** marks

- | | |
|---|--------------|
| 13. Explain how commensalism benefits one microorganism with out affecting the other. | [U] / [CO1] |
| 14. Describe how ectomycorrhizae improve nutrient uptake by plants. | [K] / [CO1] |
| 15. Discuss the microbiology of silage. | [C] / [CO2] |
| 16. Analyse the role of microorganisms in the oxidation and reduction steps of sulphur cycle. | [An] / [CO2] |
| 17. Explain the symptoms and mode of transmission of TMV. | [A] / [CO3] |
| 18. Explain the mechanism of action of Bt toxin against insect pest. | [A] [CO3] |

[5x4 = 20]

Part C

Essay Question

Answer any **1** questions

Each question carries **10** marks

- | | |
|--|------------|
| 19. Explain the major groups of microorganisms present in soil and their importance in soil fertility. | [U]/ [CO1] |
| 20. Construct a detailed account of Nitrogen cycle by integrating the processes of nitrogen fixation, ammonification, nitrification and denitrification. | [C]/ [CO2] |

[10x1 = 10]

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Name :

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) EXAMINATION OCTOBER 2026
FIFTH SEMESTER
MG5DSCMBG301 – ESSENTIALS OF IMMUNOLOGY
(2024 ADMISSION ONWARDS)

Duration: 1.5 Hours

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 Notes Questions

Answer any **10** questions

Each question carries **2** marks

- | | | |
|-----|--|--------------|
| 1. | What is variolation? | [K] / [CO:1] |
| 2. | Define a hapten. | [K] / [CO:2] |
| 3. | Mention any two differences between primary and secondary immune responses | [K] / [CO:3] |
| 4. | What is cross-infection? Mention one example. | [U] / [CO:1] |
| 5. | Which immunoglobulin is mainly present in secretions such as saliva and tears? | [K] / [CO:2] |
| 6. | Mention any two functions of antibodies in humoral immunity. | [U] / [CO:3] |
| 7. | What is the role of skin in innate immunity? | [K] / [CO:1] |
| 8. | What type of antigen participates in an agglutination reaction? | [U] / [CO:2] |
| 9. | Give two examples of organ-specific autoimmune diseases. | [K] / [CO:3] |
| 10. | Give two examples of artificially acquired passive immunity. | [K] / [CO:1] |
| 11. | What are antigen-presenting cells (APCs)? Give two examples. | [U] / [CO:1] |

12. What does the absence of haemolysis indicate in direct CFT? [U] / [CO:2]

[2x10 = 20]

Part B

Short Essay Questions

Answer any **4** questions

Each question carries **5** marks

13. Explain the mechanism of Type I hypersensitivity. [U] / [CO:3]
14. Explain the structure and functions of the thymus. [U] / [CO:1]
15. Describe the factors responsible for the development of autoimmune diseases. [U] / [CO:3]
16. Describe the steps involved in the production of monoclonal antibodies. [U] / [CO:2]
17. Explain Type IV hypersensitivity and why it is called delayed hypersensitivity. [U] / [CO:3]
18. Explain the role of CD4⁺ and CD8⁺ T cells in cell-mediated immunity. [An] / [CO:3]

[5x4 = 20]

Part C

Essay Question

Answer any **1** questions

Each question carries **10** marks

19. Explain the classical pathway of complement activation in detail with a diagram. [U] / [CO:2]
20. Describe the mechanism of Type III hypersensitivity and explain the role of immune complexes in tissue damage. [U] / [CO:3]

[10x1 = 10]

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Name :

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) EXAMINATION OCTOBER 2026
FIFTH SEMESTER
DSE – MG5DSEMBG300 – MEDICAL BACTERIOLOGY I
(2024 ADMISSION ONWARDS)

Duration: 2 hours

Maximum Marks: 70

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

Very Short Answer Questions

Answer all questions

Each question carries **1** marks

1. Name the dye used as substrate/artificial electron donor for oxidase test. [K] / [CO 1]
2. Write any one selective medium used for *Staphylococcus aureus*. [K] / [CO 2]
3. Name the neurotoxin toxin responsible for tetanus. [K] / [CO 3]
4. Recall the serological test used for diagnosing Enteric fever. [K] / [CO 4]
5. Identify the etiology of meningococemia. [A] / [CO 2]

[1x5 = 5]

Part B

Short Answer Questions

Answer any **10** questions

Each question carries **2** marks

6. Explain the interpretation of a TSI result with alkaline slant and acidic butt. [U] / [CO 1]
7. Determine the application of tube coagulase test [A] / [CO 2]
8. List the major toxins of *Clostridium perfringens* and their significance. [K] / [CO 3]
9. What is Quellung reaction? [K] / [CO 2]

- | | |
|---|--------------------|
| 10. Explain the use of toxoid with an example. | [A] / [CO 3] |
| 11. What is swarming? | [K] / [CO 1] |
| 12. Explain significant bacteriuria. | [U] / [CO 4] |
| 13. Explain the biochemical characterization of <i>Klebsiella</i> | [A] / [CO 4] |
| 14. Illustrate the difference in morphology of <i>Neisseria</i> spp. | [U] / [CO 2] |
| 15. Explain Lancefield groups. | [U] / [CO 2] |
| 16. What is infant botulism? | [K] / [CO 3] |
| 17. Analyze the role of <i>Pseudomonas aeruginosa</i> in nosocomial infections. | [An] / [CO 4] |
| | [2x10 = 20] |

Part C

Short Essay Questions

Answer any 5 questions

Each question carries 6 marks

- | | |
|---|---------------|
| 18. Explain the principle and interpretation of MR and VP test. | [U] / [CO 1] |
| 19. Describe the morphology and cultural characteristics of <i>Streptococcus pneumoniae</i> | [K] / [CO 2] |
| 20. Explain the pathogenesis of non-suppurative Streptococcal diseases. | [A] / [CO 2] |
| 21. Summarize the laboratory diagnosis of diphtheria. | [U] / [CO 3] |
| 22. Explain the etiology and clinical features of human anthrax. | [U] / [CO 3] |
| 23. Classify Vibrios. Explain the serological classification introduced by Gardner and Venkatraman. | [An] / [CO 4] |
| 24. Categorize the pathogenesis of Diarrheagenic <i>E. coli</i> . | [An] / [CO 4] |

[6x5 = 30]

Part D

Essay Questions

Answer any 1 questions

Each question carries 15 marks

- | | |
|---|--------------|
| 25. Describe the virulence factors and pathogenesis of Staphylococcal infections and intoxications. | [K] / [CO 2] |
|---|--------------|

26. Explain the etiology, pathogenesis and laboratory diagnosis of bacillary dysentery

[U] / [CO 4]

[15x1 = 15]

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MGU-UGP (HONOURS) REGULAR/IMPROVEMENT/REAPPEARANCE
EXAMINATION , OCTOBER 2026
FIFTH SEMESTER
DISCIPLINE SPECIFIC ELECTIVE - MG5DSEMBG301- MEDICAL PARASITOLOGY
(2024 ADMISSION ONWARDS)

Duration: 2 hours

Maximum Marks: 70

Remember(K),Understand (U),Apply(A), Analyse(An),Evaluate(E), Skills(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
Very Short Answer Questions
Answer all questions
Each question carries **1** marks

- | | |
|--|------------------|
| 1. What is Definitive host? | [K]/[CO1] |
| 2. Name the organisms which cause malarial infection | [K]/[CO3] |
| 3. What is Strobila? | [K]/[CO4] |
| 4. What is Amoebiasis? | [K]/[CO2] |
| 5. Define creeping eruption | [K]/ [CO4] |
| | [1x5 = 5] |

PART B
Short answer Questions
Answer any **10** questions
Each question carries **2** marks

- | | |
|---|------------|
| 6. Outline the different classes of parasites | [U]/ [CO1] |
| 7. Cite about NIH swab | [K]/ [CO4] |
| 8. Explain the mode of transmission of <i>Trichomonas vaginalis</i> . | [U]/ [CO2] |
| 9. Cite about the characteristics of good thin film | [U]/ [CO1] |
| 10. Write a brief account on Traveller's diarrhea. | [K]/ [CO2] |

- | | |
|--|--------------------|
| 11. Write short notes on pathogenicity and clinical features of Balantidiasis. | [K]/ [CO3] |
| 12. Explain the pathogenicity of <i>A.lumbricoides</i> | [U]/ [CO4] |
| 13. Outline the lab diagnosis of Toxoplasma. | [K]/ [CO3] |
| 14. Illustrate the Laboratory diagnosis of <i>Taenia solium</i> . | [U]/ [CO4] |
| 15. Explain Simple floatation technique | [U]/ [CO1] |
| 16. Explain fascioliasis | [U]/ [CO4] |
| 17. Write about dehaemoglobinisation | [K]/ [CO1] |
| | [2x10 = 20] |

PART C

Short essay Questions

Answer any 5 questions

Each question carries 6 marks

- | | |
|---|-------------------|
| 18. Write about thin smear preparation and examination | [K] / [CO1] |
| 19. Illustrate the clinical features of <i>W.bancrofti</i> | [U] / [CO4] |
| 20. Discuss in detail the life cycle of <i>Entamoeba histolytica</i> | [U] / [CO2] |
| 21. Write a short essay on concentration technique | [K] / [CO1] |
| 22. Write in detail about the life cycle of <i>Cryptosporidium parvum</i> | [K] / [CO3] |
| 23. Explain Pathogenic effects caused by <i>Anchylostoma</i> laravae | [U] / [CO4] |
| 24. Explain the Laboratory diagnosis of <i>Leishmania donovani</i> . | [U] / [CO2] |
| | [6x5 = 30] |

PART D

Essay Questions

Answer any 1 questions

Each question carries 15 marks

- | | |
|--|--------------------|
| 25. Write an essay on blood smear examination | [K] / [CO1] |
| 26. Explain the pathogenicity, clinical features and lab diagnosis of <i>Schistosoma haematobium</i> | [U] / [CO4] |
| | [15x1 = 15] |

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MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) EXAMINATION OCTOBER 2026

FIFTH SEMESTER

DSE – MG5DSEMBG302 – Food Safety and Management

(2024 ADMISSION ONWARDS)

Duration: 2 hours

Maximum Marks: 70

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

Very Short Answer Questions

Answer all questions

Each question carries **1** mark.

1. List the three main types of hazards in food. [U] / [CO 1]
2. What is the purpose of the Food Safety and Standards Rules, 2011? [K] / [CO 2]
3. What is BAM? [K] / [CO 3]
4. What does HACCP stand for? [K] / [CO 4]
5. Define CCP? [K] / [CO 4]

[1x5 = 5]

Part B

Short Answer Questions

Answer any **10** questions.

Each question carries **2** marks.

6. What are microbiological criteria? State their importance in food safety. [U] / [CO 1]
7. List the three major types of food hazards with one suitable example for each. [U] / [CO 1]
8. State the importance of food standards in the food industry. [U] / [CO 1]
9. Define how the FSS Act consolidated earlier food laws. [U] / [CO 2]
10. How does APEDA play a role in agricultural export promotion? [U] / [CO 2]

- | | |
|--|--------------|
| 11. Define MPEDA and state any two of its functions. | [U] / [CO 2] |
| 12. Write about international food safety regulations. | [K] / [CO 3] |
| 13. State Codex Alimentarius. | [U] / [CO 3] |
| 14. State two differences between European Union regulations and US FDA regulations. | [U] / [CO 3] |
| 15. What is meant by the Farm-to-Table concept? | [K] / [CO 4] |
| 16. State the importance of having a multidisciplinary HACCP team. | [U] / [CO 4] |
| 17. State the importance of monitoring CCPs in the HACCP system. | [U] / [CO 4] |

[2x10 = 20]

Part C

Short Essay Questions

Answer any **5** questions.

Each question carries **6** marks.

- | | |
|--|---------------|
| 18. List and explain the Good Hygiene Practices that food handlers should follow. | [U] / [CO 1] |
| 19. Explain how the Food Safety and Standards Act, 2006, establishes a comprehensive framework for food safety in India. | [U] / [CO 2] |
| 20. Explain how MPEDA supports the export of marine products to international markets. | [U] / [CO 2] |
| 21. Explain the highlights of US FDA regulations. | [U] / [CO 3] |
| 22. Explain in detail about ISO22000. | [K] / [CO 3] |
| 23. Explain the concept and importance of HACCP in food safety. | [An] / [CO 4] |
| 24. Explain the different stages involved in the production of poultry meat from receiving live birds to distribution. | [An] / [CO 4] |

[6x5 = 30]

Part D

Essay Questions

Answer any **1** question

Each question carries **15** marks. Re-Emerging

- | | |
|---|--------------|
| 25. An operator of a food business unit is setting up a new food manufacturing facility. Apply the provisions of the Food Safety and Standards Act, 2006 and the Food Safety and Standards Rules, 2011 to demonstrate how food safety can be ensured from the stage of production to distribution and sale. | [A] / [CO 2] |
|---|--------------|

26. Explain in detail the 7 principles of HACCP with examples.

[U] / [CO 4]

[15x1 = 15]

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MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) EXAMINATION OCTOBER 2026

FIFTH SEMESTER

DSE – MG5DSEMBG301 – Emerging and Re-Emerging Diseases

(2024 ADMISSION ONWARDS)

Duration: 2 hours

Maximum Marks: 70

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

Very Short Answer Questions

Answer all questions

Each question carries **1** mark.

1. Define bioterrorism. [U] / [CO 1]
2. Name one cause of antimicrobial resistance. [K] / [CO 2]
3. Which fungal infection is commonly known as "Black fungus"? [K] / [CO 4]
4. Give any one symptom of Ascariasis. [K] / [CO 4]
5. What is MDR-TB? [K] / [CO 3]

[1x5 = 5]

Part B

Short Answer Questions

Answer any **10** questions.

Each question carries **2** marks.

6. What is Kala-Azar? [K] / [CO 4]
7. List any four symptoms of bubonic plague. [K] / [CO 1]
8. What is oral candidiasis? Mention one clinical feature. [U] / [CO 4]
9. Name two factors that affect human susceptibility to infection. [K] / [CO 2]
10. A community has poor disease surveillance. Propose two measures to improve outbreak detection. [An] / [CO 2]

- | | |
|---|--------------|
| 11. Mention any two symptoms of Ebola virus disease. | [R] / [CO 3] |
| 12. What is Chagas disease? Mention its causative agent and mode of transmission. | [U] / [CO 4] |
| 13. How is Lyme disease transmitted? | [K] / [CO 3] |
| 14. Mention two vaccine-preventable re-emerging diseases. | [K] / [CO 1] |
| 15. Recall two factors that can weaken host resistance to infection. | [K] / [CO 2] |
| 16. Why is international collaboration important in controlling EIDs? | [K] / [CO 2] |
| 17. Why is yellow fever considered a re-emerging disease? | [U] / [CO 1] |

[2x10 = 20]

Part C

Short Essay Questions

Answer any **5** questions.

Each question carries **6** marks.

- | | |
|--|--------------|
| 18. Mention the social conditions that favour the spread of infectious diseases. | [U] / [CO 2] |
| 19. Describe the epidemiology and transmission of cholera. | [U] / [CO 1] |
| 20. Write an account of <i>Mycobacterium ulcerans</i> and Buruli ulcer. | [U] / [CO 3] |
| 21. Describe the causative agent and mode of transmission of malaria. | [U] / [CO 4] |
| 22. Explain the role of GOARN in strengthening global health security | [U] / [CO 2] |
| 23. Explain the role of fruit bats in the transmission of Nipah virus. | [U] / [CO 3] |
| 24. Discuss the impact of typhus on public health development. | [U] / [CO 1] |

[6x5 = 30]

Part D

Essay Questions

Answer any **1** question

Each question carries **15** marks. Re-Emerging

- | | |
|--|--------------|
| 25. Define the epidemiological triad. Explain its components with a neat diagram and suitable examples. | [U] / [CO 2] |
| 26. Explain the transmission of <i>Yersinia pestis</i> involving rodents and fleas. Add notes on diagnosis and control measures. | [U] / [CO 1] |

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MGU-UGP (HONOURS) REGULAR /IMPROVEMENT/ REAPPEARANCE
EXAMINATION OCTOBER 2026
FIFTH SEMESTER
SEC - MG5SECMBG300 - ENTREPRENEURSHIP IN MICROBIOLOGY
(2024 ADMISSION ONWARDS)

Duration: 1.5 hours

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 Notes Questions

Answer any **10** questions

Each question carries **2** marks

- | | | |
|-----|--|-------------|
| 1. | Define entrepreneurship. | [K] / [CO1] |
| 2. | Who is an entrepreneur? | [K] / [CO1] |
| 3. | Mention any two functions of entrepreneurship. | [K] / [CO1] |
| 4. | State any two advantages of entrepreneurship. | [K] / [CO1] |
| 5. | List any two limitations of entrepreneurship. | [K] / [CO1] |
| 6. | What is meant by an entrepreneurial opportunity? | [U] / [CO1] |
| 7. | Who is an entrepreneurial problem solver? | [K] / [CO2] |
| 8. | What is meant by innovation? | [K] / [CO2] |
| 9. | Mention any two characteristics of an innovative entrepreneur. | [K] / [CO2] |
| 10. | What is a startup? | [K] / [CO3] |
| 11. | What is an MSME? | [K] / [CO3] |
| 12. | Mention any two differences between startups and MSMEs. | [U] / [CO3] |

[2x10 = 20]

Part B

Short Essay Questions

Answer any **4** questions

Each question carries **5** marks

- | | | |
|-----|---|--------------|
| 13. | Explain the concept of entrepreneurship and discuss its major functions. | [U] / [CO1] |
| 14. | Explain the major advantages and limitations of entrepreneurship. | [U] / [CO1] |
| 15. | Discuss the common myths about entrepreneurship and explain why they are misconceptions. | [U] / [CO1] |
| 16. | Explain the role of an entrepreneur as a problem solver. | [U] / [CO2] |
| 17. | Define startup and MSME and explain their major characteristics. | [U] / [CO3] |
| 18. | Differentiate between startups and MSMEs based on innovation, scalability, risk, funding and business objectives. | [An] / [co3] |

[5x4 = 20]

Part C

Essay Question

Answer any **1** questions

Each question carries **10** marks

- | | | |
|-----|--|-------------|
| 19. | Define entrepreneurship and explain its concept, nature and major functions in detail. | [U] / [CO1] |
| 20. | Explain the role of entrepreneurs as problem solvers and discuss the different approaches used by entrepreneurs to solve problems. | [U] / [CO2] |

[10x1 = 10]