D–6589

Sub. Code
36411

DISTANCE EDUCATION

M.Sc.(Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

First Semester

GENERAL MICROBIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Monera.
2. Spontaneous generation theory.
3. TMV.
4. Magnification.
5. Counter stain.
6. S layer.
7. Phococyanin.
8. Seaweeds.
9. Capsomere.
10. Nucleoid.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Briefly explain about the history and development of microbiology.

Or

(b) Write in detailed account on classification of fungi.

12. (a) Summaries the applications of microscope.

Or

(b) Categories the nutritional types of bacteria.

13. (a) Describe the general principles of preservation of microbes.

Or

(b) Explain about the cell membrane of prokaryotic cell.

14. (a) Draw a neat diagram of bacterial flagella with parts.

Or

(b) Compare the similarities of lichens and microalgae.

15. (a) Classify virus based on viral genome.

Or

(b) Interpret the envelopes and their composition of virus.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Summarize the factors influencing microbial growth.

17. Explain about the structural staining methods and imaging techniques.

18. Describe the fluid mosaic model of plasma membrane.

19. Elaborate the difference between prokaryotic and eukaryotic cell.

20. Describe the bacteriophages discovery, morphology and reproduction.

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D–6590	Sub. Code
	36412

DISTANCE EDUCATION

M.Sc.(Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

First Semester

MICROBIAL BIOCHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Write the importance of polysaccharides.

2. Define gluconeogenesis.

3. What is the structure of protein?

4. Draw the structure of phospholipids.

5. What is the active site of enzymes?

6. List the importance of co-enzymes.

7. What is isozyme?

8. How are the proteins synthesized from DNA?

9. Write the basic types of nucleic acids.

10. What are the microbial toxins?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the structure and classification of carbohydrates.

Or

(b) Mention the major functions of peptidoglycan for bacterial cells.

12. (a) Explain the metabolic regulations of the pentose phosphate pathway.

Or

(b) Write the biosynthesis of amino acids and their importance.

13. (a) Illustrate the major properties of fatty acids.

Or

(b) Explain the metabolic functions of lipid peroxidation.

14. (a) Demonstrate the structure of purines and pyrimidiens.

Or

(b) What are the factors involved in enzyme activity?

15. (a) Explain about the Menten hypothesis.

Or

(b) Write about the classification of secondary metabolites.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Detail about the properties and functions of vitamins.

17. Explain about the microbial pigments of phosphorescence and carotenoids.

18. Write the importance of secondary metabolites.

19. Write the mechanism of lock and key enzyme action.

20. Extend the functions of enzymes specificity and co-enzymes.

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D–6591

Sub. Code
36413

DISTANCE EDUCATION

M.Sc.(Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

First Semester

MICROBIAL PHYSIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Continuous culture.

2. Autotrophs.

3. Oxygenic photosynthesis.

4. Osmoregulation.

5. Denitrification.

6. Anaerobic respiration.

7. Entropy.

8. Diffusion.

9. Translocation.

10. Osmosis.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Briefly explain about the growth kinetics.

Or

(b) Write in detailed account on classification of microbes based on nutrition.

12. (a) Summaries the noncyclic and cyclic electron transport chain.

Or

(b) Categories the aerobic to anaerobic transitions.

13. (a) Describe the general principles of nitrogen metabolism.

Or

(b) Explain about the amphibolic pathway.

14. (a) Draw a neat flowchart of EMP.

Or

(b) Compare the similarities of thermal stress and heat shock response.

15. (a) Mention briefly about bioenergetics.

Or

(b) Interpret the active transport and group translocation.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write a detailed account of factors affecting bacterial growth.

17. Elaborate the types and structure of bacterial photosynthesis.

18. Identify the importance of microbial stress responses.

19. Describe the steps and cycle of TCA.

20. Discuss in detail about Quorum sensing.

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D–6592

Sub. Code
36421

DISTANCE EDUCATION

M.Sc.(Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

Second Semester

MICROBIAL GENETICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Mutation.

2. What are the physical mutagens?

3. Recombination.

4. Transformation.

5. What is lac component?

6. Arabinose operon.

7. Methyl directed mismatch repair.

8. Hfr conjugation.

9. Write any two-deduction method of plasmid DNA.

10. What are retro transposons?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the types of mutation.

Or

(b) Explain about DNA damage due to reactive oxygen.

12. (a) What are the different types of recombination? Explain in detail.

Or

(b) Illuminate about DNA mobilization.

13. (a) What is negative regulation? Write in detail.

Or

(b) State about the tryptophan operon attenuation.

14. (a) State the molecular mechanism for site specific recombination.

Or

(b) Explain about generalised transduction.

15. (a) Discuss the method of purification of plasmid DNA.

Or

(b) Write a brief note on bacteria phase mu and TN 7.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Elaborate the note on mutation rate and its determination.

17. Explain the molecular mechanism of homologous recombination.

18. Explain the regulation of bacterial gene expression.

19. Write a detailed note on lactose system.

20. Discuss about replication of plasmid.

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D–6593	Sub. Code
	36422

DISTANCE EDUCATION

M.Sc.(Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

Second Semester

MOLECULAR BIOLOGY AND rDNA TECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Explain : DNA.

2. Mention any two functions of AUG codon.

3. What is the function of amino acyl t-RNA synthase?

4. How does temperature denature DNA?

5. How do you extract the human insulin gene?

6. Define : Okazaki fragments.

7. Short notes on HBs Ag in yeast.

8. Write the steps in the vaccine production process.

9. Explain : nus A protein.

10. Who is the father of antibiotics?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the process of translation.

Or

(b) Distinguish between denaturation and renaturation.

12. (a) What process is used to produce most antibiotics?

Or

(b) Short notes on shotgun sequencing.

13. (a) What is the difference between a DNA library and a cDNA library?

Or

(b) What is an operon? Explain an inducible operon.

14. (a) Short notes on micro projectile bombardment.

Or

(b) Describe about the application of PCR.

15. (a) Mention briefly about the CaMV vector.

Or

(b) Describe about the micro array in DNA sequencing.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the structure, function and types of DNA.

17. Enumerate the post-transcriptional modifications in a eukaryotic mRNA.

18. Explain the process of DNA fingerprinting.

19. Distinguish between Northern, Southern and Western blotting.

20. Elaborate in detail about the types and mechanism of gene silencing.

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D–6594

Sub. Code
36423

DISTANCE EDUCATION

M.Sc.(Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

Second Semester

FOOD AND DAIRY MICROBIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What is microorganisms?

2. Define water activity.

3. What is spoilage?

4. Define fungal toxins.

5. What is bifidus milk?

6. Define fermentation.

7. List out the production enzymes.

8. Define AGMARK.

9. Define food sanitation.

10. List out the fermented milk products.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Write the antimicrobial barriers and constituents.

Or

(b) Describe the food related micro-organisms.

12. (a) Write the principles of food preservation.

Or

(b) Discuss the contamination of cereal products.

13. (a) Explain the spoilage of milk and milk products.

Or

(b) Write the process of microbial food fermentation.

14. (a) Describe the lipases and glucose isomerases.

Or

(b) Write the objectives of investigation.

15. (a) Illustrate the food borne infections.

Or

(b) Describe the evolution of quality milk.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe the extrinsic factors.

17. Explain the contamination and spoilage of meat and meat products.

18. Elaborate the fermented beverages-fruit and cereal based products.

19. Discuss the food plant sanitation and milk test.

20. Explain food laws and quality control of PFA.

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D–6595

Sub. Code
36431

DISTANCE EDUCATION

M.Sc.(Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

Third Semester

IMMUNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. T cell receptors.
2. NK cells.
3. Immunogenicity.
4. Epitops.
5. Haemokines.
6. Precipitation.
7. MHC class II molecules.
8. Myasthenia gravis.
9. Attenuated vaccine.
10. Transplantation.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short on secondary lymphoid organs.

Or

(b) Briefly explain about the humoral immune response.

12. (a) Discuss briefly about B-cell receptors.

Or

(b) Write in detail about innate immunity.

13. (a) Write a brief note on structure and functions of IgG.

Or

(b) Give a brief account on IgA immunoglobulins.

14. (a) Write a short notes on generation of antibody diversity.

Or

(b) Distinguish between T dependent and T independent antigens.

15. (a) Write short notes on type IV hypersensitivity reaction.

Or

(b) Explain briefly about oncogenes anti-oncogenes.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give an account on history of immunology.

17. Write in detail about gene organization and expression.

18. Describe in detail about classical pathway of complement fixation.

19. Discuss in detail about the HLA tissue typing.

20. Write in detail about monoclonal antibody production.

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D–6596

Sub. Code
36432

DISTANCE EDUCATION

M.Sc.(Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

Third Semester

MEDICAL MICROBIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Clinical specimen.

2. Gastro intestinal tract.

3. Leptospirosis.

4. Pharyngitis.

5. SARS.

6. Dermatophytes.

7. Metranidazole.

8. Emerging infections.

9. Nocardiosis.

10. Human papilloma virus.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Enlist the normal microbial flora of respiratory tract.

Or

(b) Write short notes on microbiological examination of blood.

12. (a) Give a brief account on Yersiniosis.

Or

(b) Write short notes on vibriosis.

13. (a) Write about mycotoxicosis and its symptoms.

Or

(b) What cause candidiasis? Explain briefly.

14. (a) Give a brief account on the mode of action of antifungal drug amphotericin.

Or

(b) Explain the pathogenesis of Zika virus.

15. (a) Briefly explain about the mode of action of antiviral drug – amantadine.

Or

(b) What are the symptoms of swine flu and how its can be treated?

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail about the noscominal infections.

17. Explain in detail about the general characters, pathogenesis, laboratory diagnosis, treatment of tubuerculosis.

18. Give a detailed note on pathogenesis and laboratory diagnosis of AIDS.

19. Explain in detail about the H1N1 virus.

20. Give a detailed note on general characters, pathogenesis, laboratory diagnosis and control measures of *Bordetella pertussis.*

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D–6597

Sub. Code
36433

DISTANCE EDUCATION

M.Sc.(Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

Third Semester

ENVIRONMENTAL OF AGRICULTURE MICROBIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Biotic environment.
2. Eutrophication.
3. Composting.
4. Activated sludge.
5. Acid rain.
6. Oxone depletion.
7. Phyllosphere.
8. Biomagnification.
9. Degradative plasmid.
10. Lipoxygenase.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the concept of biosphere.

Or

(b) Explain about the microbial changes in eutrophic bodies of water.

12. (a) Describe briefly about the green house effect.

Or

(b) Explain the saccharification of solid waste treatment.

13. (a) Write a brief note on rhizosphere.

Or

(b) Briefly explain about the structure of soil.

14. (a) Write short notes about the molecular aspects of host defense reactions of plants.

Or

(b) Discuss brief about the chemical control of plant disease management.

15. (a) Briefly discuss on the oxidation pond.

Or

(b) Write about the containment of acid mine drainage applying biomining.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Narrate the conservation and management of ecosystems.

17. Discuss about the methanogenesis.

18. Give an account on biogeochemical cycles.

19. Describe about the symptoms, etiology and management of mosaic disease of tobacco.

20. Elaborate the defense mechanisms in plants.

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D–6598

Sub. Code
36441

DISTANCE EDUCATION

M.Sc.(Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

Fourth Semester

BIO PROCESS TECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Secondary metabolites.

2. Sterilization.

3. Microbial based fermentor.

4. Fed-batch fermentation.

5. Agitation.

6. Precipitation.

7. L-Lysine.

8. Fermentation economics.

9. Microbial strain.

10. Starter culture technology.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the stoichiometry of cell growth and product formation.

Or

(b) Give a brief account on the components of fermentation process.

12. (a) Differentiate the batch and continuous fermentation.

Or

(b) Write short notes about the advantages of fermentation.

13. (a) Describe briefly about chromatography.

Or

(b) Write down the centrifugation process in fermentation.

14. (a) Brief out the microbial based amino acids production.

Or

(b) Explain about Riboflavin.

15. (a) What is dual fermentation process? Explain briefly.

Or

(b) Write short notes on membrane based fermentation product separation.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give an account on sterilization of media and fermentor.

17. Detail about the construction of fermentor.

18. Describe the recovery and purification of fermentation products.

19. Elaborate the production of organic acids and their marketing.

20. Give an account on recombinant proteins.

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D–6599

Sub. Code
36442

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

Fourth Semester

MICROBIAL BIOTECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Plasmid.

2. Genetic engineering.

3. Bacterial insecticide.

4. Pathogens.

5. Biosensor.

6. Biocompost.

7. Antagonists.

8. Polyesters.

9. Expression vectors.

10. Restriction endonuclease.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Enlist the biotechnological applications of algae in agriculture.

Or

(b) Write down the steps involved in the tissue culture technique.

12. (a) Brief about siderophores and parasitism with suitable examples.

Or

(b) Comment on baculovirus as viral insecticide.

13. (a) How the oil and fat were converted into biodiesel?

Or

(b) Write short notes on electrochemical microbial bisensor.

14. (a) Enlist the applications of genetically modified micro-organisms in agriculture.

Or

(b) List out the applications of genetically modified micro-organisms in environment.

15. (a) Write short notes on human growth harmones.

Or

(b) Briefly explain about optical microbial biosensor.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detailed about the different methods of gene introduction.

17. Elaborate about entamopathogenic fungi.

18. Give a detailed note on microbial based H_2 production.

19. Explain in detailed about the microbial herbicides, their formulation and applications.

20. Give a detailed note on somatic hybridization method in algae.

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D–6600

Sub. Code
36443

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2024.

Fourth Semester

BIOINFORMATICS AND BIOSTATISTICS

(CBCS 2018–2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. What is meant by workstations?

2. Define Pubmed.

3. What is LINUX?

4. Write a short note on BLAST.

5. Define Swiss prot.

6. Write down the scope of biostatistics.

7. What is Standard Deviation?

8. What is terminology in probability?

9. Define F-test.

10. What is Regression?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write a brief note on public biological databases.

Or

(b) Explain about genome of web.

12. (a) Classify about multifunctional tools for sequence analysis.

Or

(b) Explain about Phylogenetic alignment.

13. (a) Explain random and non-random methods.

Or

(b) Explain theorems of probability.

14. (a) Write a brief note on characteristics of Chi Square test.

Or

(b) What is Null hypothesis? Explain it.

15. (a) Explain the types of correlation.

Or

(b) Write briefly about graphic and algebraic methods of regression.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe about sequence in genome.

17. Explain in detail about proteomics.

18. Illustrate skewness and kurtosis.

19. Elaborate in detail about the correlation.

20. Explain in detail about regression equation.

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