D–1636

Sub. Code
36411

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

First Semester

GENERAL MICROBIOLOGY

(CBCS – 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Leewenhoek

2. John Tyndall

3. Bright field Microscope

4. Micrometry

5. Algae

6. Chlamydias

7. Protozoa

8. Pasteurization

9. Capsule staining

10. Prions.

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Write an account on industrial uses of yeast and molds.

Or

(b) Explain the Haeckel's three-Kingdom concept.

12. (a) Differentiate between Simple and Compound Microscope.

Or

(b) Describe the Principle and applications of Transmission Electron Microscope.

13. (a) Give a brief account on staining methods.

Or

(b) Give a brief note on growth kinetics.

14. (a) Write a short note on microalgae.

Or

(b) Discuss the general characteristics of protozoa.

15. (a) Explain the ultrastructure of viruses.

Or

(b) Explain briefly about viral genome.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Elaborate on the classification of fungi.

17. Describe the principle and application of Confocal Microscope.

18. Give a detailed account on Methods of Sterilization.

19. Give a detailed account on general characteristics of microalgae.

20. What is virus? Elaborate the life cycle of the virus.

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D–1637

Sub. Code
36412

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

First Semester

MICROBIAL BIOCHEMISTRY

(CBCS – 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Carbohydrates

2. Protein

3. ED pathway

4. Lipids

5. Nucleic acid

6. Enzyme

7. Allosteric inhibition

8. Induced fit theory

9. Antibiotics

10. Vitamins.

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Write an account on Agar-agar.

Or

(b) Explain the gluconeogenesis.

12. (a) Write a short note on biosynthesis of amino acids.

Or

(b) Describe about classification of protein.

13. (a) Give a brief account on types of classification of fatty acids.

Or

(b) Give a brief note on lipid peroxidation.

14. (a) Write a short note on active site of enzyme.

Or

(b) Discuss about Lock and Key model.

15. (a) Explain the *Salmonella* toxin.

Or

(b) Explain briefly about properties of vitamins.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Elaborate the classification of carbohydrates.

17. Describe about α, β and γ oxidation of fatty acids.

18. Give a detailed account on factors affecting enzyme activity.

19. Write a detailed account on Microbial pigments.

20. What is Vitamins? Explain the classification, properties and functions of Vitamins.

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D–1638

Sub. Code
36413

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

First Semester

MICROBIAL PHYSIOLOGY

(CBCS – 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. pH

2. Organotropy

3. COA pathway

4. Chlorophylls

5. Acid tolerance

6. Denitrification

7. Mitochondria

8. Amphibolic reactions

9. Enthalpy

10. Uncouplers.

PART B — (5 × 5 = 25 marks)

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

11. (a) Write an account on synchronous culture.

Or

(b) Explain the importance of chemotrophism.

12. (a) Give the difference between cyclic and non-cyclic electron transport.

Or

(b) Describe about aerobic to anaerobic transitions.

13. (a) Give a brief account on types of microbial photosynthesis.

Or

(b) Give a brief note on oxidative stress.

14. (a) Write a short note on physiology of nitrogen fixation.

Or

(b) Discuss about substrate level phosphorylation.

15. (a) Explain the active transport.

Or

(b) Explain briefly about quorum sensing.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Elaborate the growth kinetics.

17. Describe about chemoheterotrophism.

18. Give a detailed account on Microbial stress response.

19. Write a detailed account on group translocation.

20. What is QS? Explain the mechanism of quorum sensing.

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D–1639

Sub. Code
36421

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

Second Semester

MICROBIAL GENETICS

(CBCS – 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Mutation

2. Base excision repair

3. SOS

4. Transformation

5. Hfr conjugation

6. Operon

7. Phage

8. Tn7

9. Retrotransposons

10. Plasmid incompatibility.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the deamination of DNA bases.

Or

(b) Write short notes on mutagens.

12. (a) Write about site-specific recombination.

Or

(b) Discuss conjugational mapping.

13. (a) Describe Lac components.

Or

(b) Describe Tryptophan operon.

14. (a) Write in brief about epigenetics.

Or

(b) Explain Transposable elements.

15. (a) Write short notes on the purification of plasmid DNA.

Or

(b) Describe plasmid amplification.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Elaborate the DNA repair pathways.

17. Write in detail about the process of transduction.

18. Describe the regulation of bacterial gene expression.

19. Describe the various types and properties of plasmids.

20. Discuss in detail the mechanism of transposition.

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D–1640

Sub. Code
36422

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

Second Semester

MOLECULAR BIOLOGY AND rDNA TECHNOLOGY

(CBCS – 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Circular DNA

2. Primase

3. tRNA

4. Promoters

5. Reverse transcription

6. YAC vectors

7. Plasmids

8. Shotgun Cloning

9. RFLP

10. Electroporation.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the Meselson-Stahl experiment.

Or

(b) Define mRNA and rRNA.

12. (a) Describe RNA polymerase and its subunits.

Or

(b) Give an account of viral vectors.

13. (a) Write short notes on HGP.

Or

(b) Explain Northern and Southern blotting.

14. (a) Give brief notes on gene amplification.

Or

(b) Write briefly about microarray.

15. (a) Describe microprojectile bombardment.

Or

(b) Give short notes on the role of Ti plasmids in plant genetic engineering.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Elaborate on the mechanism of DNA replication.

17. Explain the process of transcription in prokaryotes.

18. What is gene cloning? Elaborate various methodologies of cloning.

19. What is gene silencing? Describe the mechanism of gene silencing.

20. Describe the various methods associated with DNA sequencing.

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D–1641

Sub. Code
36423

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

Second Semester

FOOD AND DAIRY MICROBIOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Temperature

2. Water activity

3. Food preservation

4. Canned foods

5. Acidophilus milk

6. SCP

7. Fermented milk

8. Phytases

9. Quality control

10. HACCP.

PART B — (5 × 5 = 25 marks)

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

11. (a) Write short notes on the nutrient content of the food.

Or

(b) Briefly explain about Gaseous atmosphere.

12. (a) Discuss briefly about fungal foodborne infections.

Or

(b) Describe briefly about Seafoods.

13. (a) What is the role of microorganisms in the dairy industry? Explain.

Or

(b) Give a brief account on bifidus milk.

14. (a) Write a short note on Mushroom.

Or

(b) Explain about the cereal-based fermented beverages.

15. (a) Briefly explain about the industrial production of amylases.

Or

(b) Explain briefly MFPO.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Give an account on Intrinsic and extrinsic factors of food.

17. Write in detail about the physical and chemical methods of food preservation.

18. Discuss in detail about the industrial production of glucose isomerase.

19. Describe in detail about the microbial production of food.

20. What is food sanitation? Elaborate on its control measures.

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D–1642

Sub. Code
36431

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

Third Semester

IMMUNOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Immune cells

2. Maturation

3. Immunoglobulins

4. Adjuvants

5. Antigens

6. Complement system

7. Oncogenes

8. Antibody engineering

9. Hypersensitivity

10. Pluripotent cells.

PART B — (5 × 5 = 25 marks)

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

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

Or

(b) Briefly explain about cell-mediated immunity.

12. (a) Discuss briefly about haemokines.

Or

(b) Describe about Immunogens.

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

Or

(b) Give a brief account on avidity.

14. (a) Write a short note on alternate pathways.

Or

(b) Explain about the endocytic pathways.

15. (a) What are autoimmune disorders? Explain briefly.

Or

(b) Explain brief about antioncogens.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Give an account on the role of toll-like receptors in innate immunity.

17. Write in detail about antibody diversity.

18. Describe in detail about the MHC.

19. Discuss in detail about the hypersensitivity reactions.

20. What are stem cells? Elaborate on its clinical applications.

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D–1643

Sub. Code
36432

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

Third Semester

MEDICAL MICROBIOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Biohazard

2. Blood

3. Nosocomical infection

4. Lockjaw

5. Yellow fever

6. Dengue

7. Mumps

8. Quinine

9. HIN1

10. Protozoa

PART B — (5 × 5 = 25 marks)

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

11. (a) Write a short notes on wound exudates.

Or

(b) How to collect and transport the clinical samples? Explain briefly.

12. (a) Is pneumonia contagious? What are the symptoms of pneumonia?

Or

(b) Discuss briefly about nocardiosis.

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

Or

(b) Give a brief account on AFB.

14. (a) Write a short note on measles.

Or

(b) Explain about the Japanese encephalitis.

15. (a) Describe the mode of action of Penicillin.

Or

(b) Explain briefly about antiparasitic drugs.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Give an account on the normal flora of the human respiratory tract.

17. Write in detail about the yersiniosis.

18. Describe elaborately about AIDS.

19. Discuss in detail about the mycosis.

20. Explain about emerging and reemerging infections.

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D–1644

Sub. Code
36433

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

Third Semester

ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Food web

2. Abiotic environment

3. Trophic structure

4. Vermiform composting

5. Activated sludge

6. UV-B

7. Acid rain

8. Mycorrhizae

9. TMV disease

10. Crop rotation.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the ecosystem and its components.

Or

(b) Define biosphere.

12. (a) Write a note on ecological pyramids.

Or

(b) Explain the greenhouse effect.

13. (a) Write about Ozone depletion.

Or

(b) Explain briefly about the symbiotic association between plants and microbes.

14. (a) Describe in detail about xenobiotics.

Or

(b) What is the biogeochemical cycle?

15. (a) Add a brief note on the grassy shoot of sugarcane.

Or

(b) Write short notes on plant disease forecasting.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe in detail about eutrophication.

17. Explain elaborately on liquid waste management.

18. Describe the classification, properties, and structure of the soil.

19. Elaborate the defense mechanism in plants.

20. Write an account on plant pathogens and plant diseases - Host-pathogen recognition and specificity.

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D–1645

Sub. Code
36441

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

Fourth Semester

BIOPROCESS TECHNOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Fermentation technology

2. Primary Screening

3. Antifoaming agent

4. Fed-batch fermentation

5. Baffles

6. Foam Separation

7. Filtration

8. Amino acids

9. Riboflavin

10. Recombinant proteins.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Give a brief account on isolation and screening of industrially important microbes.

Or

(b) Write a brief account on the stoichiometry of the microbial growth.

12. (a) Give short notes on aeration and agitation.

Or

(b) Briefly explain about batch and continuous fermentations.

13. (a) Write a brief note on the removal of microbial cells and other solid materials.

Or

(b) Add short note on chemical method for cell disruption.

14. (a) Add short note on medium formulation and modification.

Or

(b) Give a brief note on fed-batch fermentation.

15. (a) Describe in detail about the production of Streptomycin.

Or

(b) Write a brief note on the microbial production of Riboflavin.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write an elaborate note on the formulation of fermentation media.

17. Discuss the basic functions and designing of fermenters.

18. Give a detailed account on the downstream process for the recovery of microbial product.

19. Illustrate and explain in details about the production of organic acids.

20. Give a detailed account on market potential of antibiotics.

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D–1646

Sub. Code
36442

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

Fourth Semester

MICROBIAL BIOTECHNOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Food technology

2. Cell fusion

3. Genetic engineering

4. Antagonism

5. Nematophagy

6. BT-cotton

7. VAM

8. Microbial polysaccharides

9. Bio-compost

10. Endonucleases

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Describe the scope and application of microbial biotechnology.

Or

(b) Give an account on hybridization techniques in Algae.

12. (a) Write a short note on the role of Siderophores in antagonism.

Or

(b) Briefly explain about entomopathogenic fungi.

13. (a) Write brief notes on commercial production of human growth hormones.

Or

(b) Add short note on microbial polyesters.

14. (a) Briefly explain about the production of biogas.

Or

(b) Give an account on immobilization of microorganisms.

15. (a) Write a brief account on molecular tools for genetic engineering.

Or

(b) Add brief note on ethical issues raised by GMM.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain in detail about algal biotechnology.

17. Write elaborate notes on bacterial insecticides.

18. Discuss the biodiesel production and its applications.

19. Describe in detail about electrochemical microbial biosensor.

20. Discuss the applications of genetically modified food crops.

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D–1647

Sub. Code
36443

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
DECEMBER 2021.

Fourth Semester

BIOINFORMATICS AND BIOSTATISTICS

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

Write short notes on :

1. Servers

2. World Wide Web

3. BLAST

4. Protein data bank

5. Scope of biostatistics

6. Null hypothesis

7. ANOVA

8. Correlations

9. Degrees of freedom

10. UNIX

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Give a brief account on public biological databases.

Or

(b) Brief about the sequence assembly.

12. (a) Explain about FASTA – multifunctional tools for sequence analysis.

Or

(b) Briefly explain about biochemical pathway databases.

13. (a) Write about the applications of biostatistics in biology.

Or

(b) Add short notes Skewness and kurtosis.

14. (a) Derive steps in two way ANOVA test and its importance.

Or

(b) Describe the importance of statistical software in data analysis.

15. (a) Write a brief account on multiple sequence alignments.

Or

(b) Add a brief note on methods in sampling for statistical analysis.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain in detail about computational biology approaches.

17. Discuss the process of genome structural and functional annotation.

18. Write an elaborate note on protein modeling.

19. Detail about probability and its concepts.

20. Describe the regression analysis and its types.

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