D–5643	Sub. Code
	36411

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION, MAY 2022.

First Semester

MICROBIOLOGY

GENERAL MICROBIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions

1. Archaebacteria
2. Chitin
3. Confocal microscopy
4. Indian ink
5. Synchronous culture
6. Nucleoid
7. Slim layers
8. Nostoc
9. Capsids
10. Prions

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short on Whittaker's Five – Kingdom concept.

Or

(b) Write in brief about classification of fungi.

12. (a) Give short notes on applicatons of confocal microscopy.

Or

(b) Describe the differential staining methods.

13. (a) Add short notes on types of culture media.

Or

(b) Briefly explain about various sterilization methods.

14. (a) Give brief note on chemical composition of capsule.

Or

(b) Describe the structural characteristics of protozoa.

15. (a) Give an account on classification of virus.

Or

(b) Write briefly about viral capsids and their arrangements.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Give detailed account on classification of bacteria according to Bergey's manual.

17. Write in detail about fluorescent microscope.

18. Give elaborate notes on factors influencing microbial growth.

19. Discuss about the fluid mosaic model of plasma membrane.

20. Write detailed account Iysogenic life cycle of viruses.

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D–5644

Sub. Code
36412

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION, MAY 2022.

First Semester

MICROBIAL BIOCHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions

1. Describe disaccharides.
2. Define pentose phosphate pathway.
3. Gluconeogenesis
4. Primary structure of protein
5. α-oxidation of fatty acids
6. Pyrimidines
7. Active site
8. Isozyme
9. Carotenoids
10. Aflatoxin

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Give a short note on glycolysis cycle.

Or

(b) Write about the physical properties and biological importance of proteins.

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

Or

(b) Describe about the classification and properties of lipids.

13. (a) Explain briefly about the fatty acid metabolism.

Or

(b) Discuss briefly about factors affecting enzyme activity.

14. (a) Give a short note on enzyme inhibition.

Or

(b) Describe lock and key model.

15. (a) Give a short note on classification of antibiotics based on mode of action.

Or

(b) Add a note on Botulism toxin.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Describe in detail about kerb's cycle.

17. What are all the different structures of proteins? Elaborate them with suitable illustrations.

18. Give a detailed account on synthesis and degradation of nucleic acids.

19. Write about the classification and properties of enzymes.

20. Write in detail about the different microbial pigments.

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D–5645

Sub. Code
36413

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION,
MAY 2022.

First Semester

Microbiology

MICROBIAL PHYSIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions

1. Bach culture
2. Lithotrophs
3. Acetogens
4. Phycobilins
5. Purple sulfur bacteira
6. Oxidative stress
7. Ammonification
8. Nitrogenase enzyme
9. Artificial electron donors
10. Quorum sensing

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write a brief note on bacterial growth kinetics.

Or

(b) Give a brief account on importance of chemotropism.

12. (a) Briefly explain about bacteriochlorophylls.

Or

(b) Explain the structure and function of chlorophyll pigments briefly.

13. (a) Write about physiology of nitrogen fixation in symbiotic bacteria.

Or

(b) Explain about amphibolic reactions.

14. (a) Give an account on substrate level phosphorylation.

Or

(b) Describe briefly about anaerobic respiration.

15. (a) Write in detail about entropy and enthalpy reactions.

Or

(b) Give critical comment on group translocation.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Differentiate continuous and synchronous culture.

17. Write elaborate note on photo phosphorylation in bateria.

18. Explain in detail about TCA cycle.

19. Discuss about electron transport in mitochondria.

20. Describe in detail about the transport across membrane.

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D–5646

Sub. Code
36421

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION, MAY 2022.

Second Semester

Microbiology

MICROBIAL GENETICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions

1. Base analogs
2. Pyrimidine dimers
3. Intercalating agents
4. Mating type switching
5. Natural competence
6. Transformation
7. Negative regulation
8. Catabolite regression
9. Incompatability
10. Retrotransposons

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write a short note on DNA reactive chemicals.

Or

(b) Give a brief account on DNA damage due to reactive oxygen.

12. (a) Discuss about Methyl-Directed mismatch repair.

Or

(b) Add a short note on biological roles of site specific recombination.

13. (a) Describe the mechanism of natural competence and transformation in *Bacillus subtilis*.

Or

(b) Write in brief about gene linking and mapping by transformation.

14. (a) Give a short note on tryptophan operon.

Or

(b) Discuss about the types of plasmids.

15. (a) Describe briefly about replication of plasmid.

Or

(b) What are all the different types of transposable elements? Discuss briefly.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Describe elaborately about different types of mutations.

17. Explain in detail about generalized and specialized transduction.

18. Discuss in detail about chromosomal transfer, interrupted mating and conjugational mapping.

19. Write elaborately about properties of plasmids.

20. Give a detailed account on molecular basis and epigenetics in bacteria.

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D–5647

Sub. Code
36422

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION, MAY 2022.

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 questions.

1. Phosphodiester bond

2. Topoisomerase

3. Amber

4. Rho factor

5. SV40

6. Interferon

7. Human genome project

8. RFLP

9. Antisense RNA

10. CaMV.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write short on the structure of B form of DNA.

Or

(b) Write in brief about semiconservative mode of replication.

12. (a) Give short notes on function of mRNA.

Or

(b) Describe the role of RNA polymerase.

13. (a) Add short notes on inhibitors of transcription.

Or

(b) Briefly explain about the YAC vectors.

14. (a) Give a brief note on cDNA library construction.

Or

(b) Describe the steps involved in western blotting.

15. (a) Give an account on primer designing and optimization.

Or

(b) Write briefly about features of Ti plasmids.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Give detailed account on molecular basis of DNA replications.

17. Write in detail about the characteristic of P^{BR322}.

18. Give elaborate notes on recombinant development of HBs vaccine.

19. Discuss about the various DNA sequencing methods.

20. Write a detailed account DNA transfer by microinjection and electroporation.

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D–5648

Sub. Code
36423

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Second Semester

Microbiology

FOOD AND DAIRY MICROBIOLOGY

(CBCS 2018 – 2019 Academic year onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL questions.

1. P^H
2. Intrinsic factors
3. Spoilage
4. Preservation
5. Bifidus milk
6. Cheese
7. Food fermentation
8. Phytases
9. Food law
10. MFPO.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write a short notes on relative humidity.

Or

(b) Briefly explain about the importance of microorganisms in food.

12. (a) Discuss briefly about the contamination and spoilage of meat products.

Or

(b) Describe about food borne infections.

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

Or

(b) Give a brief account on mushroom.

14. (a) Write a short note on procedure involved in milk testing.

Or

(b) Explain about the glucose isomerases.

15. (a) Write a short on industrial production of lipases.

Or

(b) Explain briefly about codex alimentarius.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Give an account on contamination and spoilage of cereals, and cereals products.

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

18. Describe in detail about the microbial food fermentation.

19. Discuss in detail about the industrial production of enzymes.

20. What is food borne diseases? How to diagnose the lab testing and preventive measures?

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D–5649

Sub. Code
36431

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Third Semester

Microbiology

IMMUNOLOGY

(CBCS 2018 – 2019 Academic year onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL questions.

1. Lymphoid organ
2. Immune cells
3. Cytokines
4. Adjuvants
5. Affinity
6. Complement system
7. Valency
8. Nerve cells
9. Precipitation
10. Pluripotents cells.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write a short note on the functions of the cells of the immune system.

Or

(b) Briefly explain about role of toll-like receptors in innate immunity.

12. (a) Discuss briefly about immunoglobulins.

Or

(b) Describe the generation of antibody diversity briefly.

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

Or

(b) Give a brief account on avidity.

14. (a) Write a short note on the classical pathways.

Or

(b) Explain the cytosolic pathways briefly.

15. (a) What are the Stem cells? Add a brief note on its clinical applications?

Or

(b) Explain briefly about killed vaccines.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Give an account on basic concepts and terminologies in immunology.

17. Write in detail about antigen and antibody interaction.

18. Describe in detail about the hypersensitivity reactions.

19. Discuss in detail about the monoclonal antibody.

20. Write in detail about the oncogens and anti - oncogens.

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D–5650

Sub. Code
36432

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION, MAY 2022.

Third Semester

MEDICAL MICROBIOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Laboratory Management
2. Urine
3. Nosocomical infection
4. Lockjaw
5. Leptospirosis
6. Nocardiosis
7. Measles
8. Swineflu
9. Zika virus
10. Anti parasitic drug.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write a short notes on throat swabs.

Or

(b) What are the biosafety principles?

12. (a) What is pharyngitis? Add a note on its symptoms.

Or

(b) Discuss briefly about Gonorrhoea.

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

Or

(b) Give a brief account on tuberculosis.

14. (a) Write a short note on chicken pox.

Or

(b) Explain about the superficial mycosis.

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

Or

(b) Explain briefly about quinine.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give an account on standard procedure to be maintained during the collection and transport the clinical samples.

17. Write in detail about the cell wall less bacteria with reference to medical Microbiology.

18. Describe elaborately about the Rabies.

19. Discuss in detail about the fungal diseases.

20. Explain in detail about malaria.

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D–5651

Sub. Code
36433

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION, MAY 2022.

Third Semester

ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Ecosystems

2. Biosphere

3. Oxidation pond

4. Liquid waste with examples

5. Biomining

6. Mycorrhizae

7. Biogeochemical cycle

8. Plant infection

9. Epidemiology

10. Crop rotation.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Add a short note on biotic and abiotic environment.

Or

(b) Explain briefly about food web.

12. (a) Write short notes on vermicomposting.

Or

(b) Explain briefly about saccarification.

13. (a) Briefly explain green house effect.

Or

(b) Discuss briefly about gasification.

14. (a) Write a short note on carbon cycle.

Or

(b) Discuss briefly about phosphorus cycle.

15. (a) Give a short account on molecular aspects of host defense reactions.

Or

(b) Describe briefly about classification of plant diseases.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give a detailed account on eutrophication.

17. Write in detail about degradation of xenobiotics in the environment.

18. Discuss elaborately about the physical and chemical properties of soil.

19. Write in detail about symptoms, epidemiology and management of bacterial blight disease of paddy.

20. Enumerate the biotechnological approaches of disease management.

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D–5652

Sub. Code
36441

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION, MAY 2022.

Fourth Semester

BIOPROCESS TECHNOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Strain improvement
2. Antifoam agents
3. Scale-up process
4. Impellors
5. Fed-batch fermentation
6. Foam separation
7. Crystallization
8. Penicillin
9. Glutamic acid
10. Recombinant proteins.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain briefly about the components of fermentation process.

Or

(b) Discuss briefly about isolation of industrially important microorganisms.

12. (a) Write a short note on formulation of industrial media.

Or

(b) Discuss briefly about the types of fermentation vessels.

13. (a) Write briefly about aseptic operation and containment.

Or

(b) Give a short note on continuous fermentation.

14. (a) Explain about the requirements of bio-product recovery.

Or

(b) Discuss briefly about physical methods of cell disruption.

15. (a) Write a short on streptomycin antibiotic.

Or

(b) Write in brief about citric acid production.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write in detail about the raw materials and medium requirements for fermentation process.

17. Give a detailed account on stoichiometry of cell growth and product formation.

18. Describe in detail about body construction for industrial fermentor.

19. Discuss elaborately about downstream processing of fermentation products.

20. Explain in detail about industrial production of amino acids.

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D–5653

Sub. Code
36442

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION, MAY 2022.

Fourth Semester

MICROBIAL BIOTECHNOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Expression vectors
2. Algal genomics
3. Antagonism
4. Bacterial insecticide
5. VAM fungi
6. Cytokines
7. Polyesters
8. Biosensor
9. GMM
10. Genetic engineering.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write a short note on scope and applications of microbial biotechnology in human therapeutics.

Or

(b) Discuss briefly about single cell protein.

12. (a) Add a short note on tissue culture technique.

Or

(b) Write briefly about basic principle of parasitism and nematophagy.

13. (a) Give an account on *Pseudomonas* as bacterial insecticide.

Or

(b) Explain briefly about BT cotton.

14. (a) Add a short note on human growth hormone.

Or

(b) Discuss briefly about application of biocompost.

15. (a) Describe briefly about genetically modified microorganisms.

Or

(b) Give a short note on applications of GMM on agriculture and environment.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail about genetic engineering of algae.

17. Explain in detail about hybridization technique in algae.

18. Discuss elaborately about the formulation and application of microbial herbicides.

19. Write elaborately about bioenergy production via microbial fuel cell.

20. Enumerate the ethical issues raised by genetically modified microorganisms.

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D–5654

Sub. Code
36443

DISTANCE EDUCATION

M.Sc. (Microbiology) DEGREE EXAMINATION, MAY 2022.

Fourth Semester

BIOINFORMATICS AND BIOSTATISTICS

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. UNIX
2. Sequence assembly
3. Web-annotating
4. FASTA
5. Swiss port
6. Feature detection
7. Median
8. Normal distribution
9. F-test
10. Algebraic methods.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Give a short note on basics of computers-servers and work stations.

Or

(b) Write in brief about finding of scientific articles using Pubmed.

12. (a) Discuss about pairwise sequence comparison.

Or

(b) Add a short note on sequence queries against biological databases.

13. (a) Describe briefly about predicting 3D structure and protein modeling.

Or

(b) Give a brief explanation about protein structure prediction and function from sequence.

14. (a) Discuss about the applications of biostatistics in biology.

Or

(b) What are all the different kinds of probabilities? Explain briefly.

15. (a) Add a short note on one way classifications of ANOVA.

Or

(b) Describe the types of regression analysis.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give a detailed account on biology in the computer age.

17. Write elaborately about multiple sequence alignments and phylogenetic alignment.

18. Discuss in detail about multifunctional tools for sequence analysis.

19. Describe elaborately about Chi Square test.

20. Write in detail about importance of statistical software in data analysis.

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