D–4590

Sub. Code
36411

DISTANCE EDUCATION

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

First Semester

GENERAL MICROBIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Archaea.

2. Monera.

3. SEM.

4. Methylene blue.

5. Synchronous culture.

6. Slime layers.

7. Differential media.

8. *Anbaena Azolla*.

9. Golgi apparatus.

10. Capsomer.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short notes on Whittaker's five Kingdom concept.

Or

(b) Give an account on general characteristics of fungi.

12. (a) Describe the principle and applications of confocal microscope.

Or

(b) Add short note on different stages of bacterial growth.

13. (a) Write in detail about culture preservation methods.

Or

(b) Add short note on bacterial endospores with example.

14. (a) Write brief note on structural characteristics of protozoa

Or

(b) Describe the cell organelles of Eukaryotes.

15. (a) Give an account on properties of viruses.

Or

(b) Write brief note on virus related agents.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss in detail about classification of fungi based on Alexopoulos system.

17. Write elaborate note on working principles of electron microscope.

18. Elaborate in detail about cell structure and organization of eubacteria.

19. Discuss about types of flagella and ultrastructure.

20. Write in detail about viral genome structure and types.

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D–4591

Sub. Code
36412

DISTANCE EDUCATION

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

First Semester

MICROBIAL BIOCHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

Draw diagrams if necessary.

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What axe peptidoglycans?
2. What is pentose- phosphate pathway?
3. What are phospholipids?
4. Draw the structure of purine.
5. What is lipid peroxidation?
6. What is enzyme specificity?
7. Explain one application of rhodopsin.
8. What are secondary metabolites?
9. Mention any five antibiotics.
10. What are co-enzymes?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the roles of starch and cellulose.

Or

(b) Briefly explain gluconeogenesis.

12. (a) Briefly explain cholesterol synthesis.

Or

(b) Draw a labelled diagram pf double helix structure and explain the structure.

13. (a) Write a note on the synthesis of purines.

Or

(b) Write a note on the synthesis of pyrimidines.

14. (a) Briefly explain coenzymes.

Or

(b) Explain the induced fit theory.

15. (a) Differentiate *Salmonella* toxin and *Cholera* toxin.

Or

(b) Write a short note on vitamins as co-factors.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give a detail account on glyoxylate cycle.

17. Explain Krebs cycle in detail.

18. Explain the physical and chemical properties of nucleic acids in detail.

19. What is enzyme kinetics? Give a light on its action mechanism.

20. Write about the biosynthesis and regulation of streptomycin.

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D–4592

Sub. Code
36413

DISTANCE EDUCATION

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

First Semester

MICROBIAL PHYSIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Synchronous culture.

2. Chemoorganotrophs.

3. Acetyl coA.

4. Carotenoids.

5. Osmoregulation.

6. Denitrification

7. Free living nitrogen fixing bacteria.

8. NADH.

9. Substrate level phosphorylation.

10. Simple diffusion.

PART B — (5 × 5 = 25 marks)

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

11. (a) Give an on batch and continuous culture.

Or

(b) Write brief account on major and microelements.

12. (a) Discuss about methanogenic group of bacteria.

Or

(b) Describe the structure of bacterio chlorophyll.

13. (a) Briefly explain about oxidative stress in bacteria.

Or

(b) Write in detail about cyclic and non-cyclic photophosphorylation.

14. (a) Give an account on symbiotic nitrogen fixation.

Or

(b) Briefly explain about the glyoxalate pathway.

15. (a) Add short note on entropy and enthalpy.

Or

(b) Briefly explain about quorum sensing in microbes.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss in detail about the nutritional diversity of bacteria.

17. Give detailed note on reductive acetyl COA pathway.

18. Explain about the physiology of nitrogen cycle.

19. Write in detail about active transport and group translocation.

20. Describe in detail about quorum sensing.

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D–4593

Sub. Code
36421

DISTANCE EDUCATION

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

Second Semester

MICROBIAL GENETICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

Draw diagram if necessary

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is Mutagenesis?

2. What is Deamination of bases?

3. Differentiate Nucleotide Excision Repair and Base Excision Repair.

4. What do you mean by Recombination and mention their types?

5. Write a short note on the Models for Recombination.

6. What is the importance of the F factor in Conjugation?

7. Write the difference between Generalized Transduction and Specialized Transduction.

8. What is Lac Operon?

9. What are Plasmids?

10. What is Transposition?

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain briefly the SOS repair mechanism.

Or

(b) Explain in short the Mismatch repair pathway.

12. (a) Write brief note on different types of DNA damages.

Or

(b) Brief about the site specific recombination.

13. (a) Comment on Hfr conjugation.

Or

(b) Explain Generalized Transduction with a scientific diagram.

14. (a) Explain in short the concept of Lac Operon

Or

(b) Explain the Tryptophan Operon in brief.

15. (a) Explain in short the mechanism and functions of Epigenetics in bacteria.

Or

(b) Explain steps involved in the purification of Plasmid.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Elaborate in detail the role of chemical agents and biological agents prior to the DNA damage.

17. Explain in detail the bacterial recombination with examples.

18. Write an essay on genetic linkage and mapping.

19. Explain in detail the role of plasmids and their types in microbial genetics.

20. Discuss on transposable elements. Write their importance genetic engineering.

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D–4594

Sub. Code
36422

DISTANCE EDUCATION

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

Second Semester

MOLECULAR BIOLOGY AND rDNA TECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Z-form of DNA

2. Gyrase

3. Okazaki fragments

4. RNA polymerase

5. Phagemids

6. p^{UC} 18

7. cDNA library

8. Nitrocellulose membrane

9. RFLP

10. CaMV vector.

PART B — (5 × 5 = 25 marks)

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

11. (a) Briefly explain the super helical structure of DNA.

Or

(b) Write in brief about theta model of replication.

12. (a) Add short notes on structure of tRNA.

Or

(b) Describe the inhibitors of transcription.

13. (a) Explain about the structure of cosmids.

Or

(b) Give a brief account on SV-40 viral vector.

14. (a) Elaborate the recombinant insulin synthesis.

Or

(b) Write about the genomic DNA library construction.

15. (a) Give brief on Maxam Gilbert's method of sequencing

Or

(b) Write briefly about the mechanism of Gene silencing.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Elaborate the molecular basis of DNA replication.

17. Explain the post transcriptional modifications of RNA.

18. Write elaborate notes on commercial production of antibiotics.

19. Discuss about method and application of southern blotting technique.

20. Write in detailed about the role of Ti plasmids in genetic engineering.

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D–4595

Sub. Code
36423

DISTANCE EDUCATION

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

Second Semester

FOOD AND DAIRY MICROBIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Temperature.

2. Water activity.

3. Extrinsic factors.

4. Sea Foods

5. Fungal toxins

6. SCP.

7. Fermented milk.

8. Amylases.

9. Food law.

10. BIS.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write a short notes on buffering capacity of food.

Or

(b) Briefly explain about the Gasous atmosphere.

12. (a) Discuss briefly about food poisoning.

Or

(b) Describe about the canned foods.

13. (a) What is spoilage? Briefly explain about the normal flora of milk and milk products.

Or

(b) Give a brief account on acidophilus milk.

14. (a) Write a short note on oriental foods.

Or

(b) Explain about the SCP.

15. (a) Briefly explain about field investigation of food borne diseases.

Or

(b) Explain HACCP briefly.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give an account on Intrinsic factors and extrinsic factors involved in that influence microbial growth in food.

17. What is the manufacturing process of cheese? How is quality evaluated?

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–4596

Sub. Code
36431

DISTANCE EDUCATION

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

Third Semester

IMMUNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ 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 stem cells.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write a short note on basic concepts of immunology.

Or

(b) Briefly explain about functions of immune cells.

12. (a) Discuss briefly about cell mediated immune response.

Or

(b) Describe the about maturation B-Lymphocytes.

13. (a) Write a brief note on functions of cytokines.

Or

(b) Give a brief account on classification of immunoglobulin.

14. (a) Add short note on adjuvants.

Or

(b) Give brief note on agglutination reaction.

15. (a) Describe about killed and DNA vaccines.

Or

(b) Explain briefly about type-III hypersensitivity.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write elaborate note on haematopoiesis.

17. Write in detail about secondary lymphoid organs.

18. Describe in detail about processing and presentation of antigen.

19. Discuss in detail about the auto immune disorders.

20. Explain the clinical applications of stem cells.

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D–4597

Sub. Code
36432

DISTANCE EDUCATION

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

Third Semester

MEDICAL MICROBIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. CSF.
2. Microbial Flora.
3. Anaerobes.
4. Cocci
5. Hepatitis.
6. Superficial mycoses.
7. Chickungunya.
8. Antibiotics.
9. Normal flora of respiratory tract.
10. Noscominal infection.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Give a brief account on safety laboratory measurement.

Or

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

12. (a) List out the general characteristics and morphology of *gonorrhoea.*

Or

(b) Describe the pathogenesis and laboratory diagnosis of *Diptheria.*

13. (a) Write down the mechanism of pathogenesis of rabies.

Or

(b) Write a note on Dengue fever.

14. (a) Write down the mode of action of antibacterial drug Penicillin.

Or

(b) How the Ebola virus is transmitted? Explain briefly.

15. (a) Briefly explain about the general characters and pathogenesis of *Tetanus.*

Or

(b) Write short notes on Salmonellosis.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give a detailed account on collection and transport of clinical specimens.

17. Explain in detail about the general characters, pathogenesis, laboratory diagnosis, treatment of gram positive spore forming bacilli- *Bacillus anthracis*.

18. Give a detailed note on cutaneous and subcutaneous mycoses.

19. Explain in detail about the pathogenesis and laboratory diagnosis of Amoebiosis.

20. Explain in detail about the acid fast bacteria- *Mycobacterium leprae*.

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D–4598

Sub. Code
36433

DISTANCE EDUCATION

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

Third Semester

ENVIRONMENTAL & AGRICULTURAL MICROBIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Ecosystems.

2. Ecological pyramids.

3. Vermiform.

4. Methanogenesis.

5. Rhizosphere.

6. Symbiotic association.

7. Lipoxygenase.

8. Bunchy top of banana.

9. Food web.

10. Trophic structures.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Differentiate the biotic and abiotic environment.

Or

(b) Write a note on food chain.

12. (a) Describe briefly about biomagnifications.

Or

(b) Explain the Ozone depletion and UV-B.

13. (a) Write about the phyllosphere.

Or

(b) Explain about the carbon cycle.

14. (a) Write short notes about the colonization of host in plant infection.

Or

(b) Give a short notes on plant disease forecasting.

15. (a) Brief about the acid rain and their impact.

Or

(b) Write in brief about the liquid waste treatment.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Narrate the definition, causes and microbial changes in eutrophication.

17. Discuss about the microbiology of degradation of xenobiotics.

18. Comments on classification, physical and chemical properties of soil.

19. Describe clearly about the biotechnological approaches to disease management.

20. Elaborate the principles of plant infection.

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D–4599

Sub. Code
36441

DISTANCE EDUCATION

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

Fourth Semester

BIO-PROCESS TECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Fermentation.

2. Fermenter.

3. Baffles.

4. Aerobic microbial growth.

5. Downstream process.

6. Foam separation.

7. Citric acid.

8. Market potential of fermentation economics.

9. Buffer.

10. Stirrer glands.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write about the microbial strain improvement.

Or

(b) Describe the starter culture technique.

12. (a) Write short notes on aseptic operation of fermentor.

Or

(b) Explain about submerged fermentation.

13. (a) Describe the removal of microbial cells and other solid materials after fermentation.

Or

(b) Write down the whole broth cell disruption process.

14. (a) Briefly explain the microbial production of Vitamin B12.

Or

(b) Explain the legislation process on production of antibiotics.

15. (a) Describe briefly about continuous fermentative process.

Or

(b) Explain the problems and requirements on bioproduct recovery in fermentor.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Elaborate about the isolation selection and preservation of industrial microbes.

17. Write about the dual and multiple fermentation process

18. Summarize the physical and chemical method of cell disruption methods.

19. Explain in detail on the microbial production of streptomycin.

20. List out the importance and difference between aerobic and anaerobic fermentation.

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D–4600

Sub. Code
36442

DISTANCE EDUCATION

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

Fourth Semester

MICROBIAL BIOTECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Algae.

2. Tranformation.

3. Pesticides.

4. Nematophagy.

5. Growth harmones.

6. Microbial polysaccharides.

7. Cell fusion.

8. Toxins.

9. pBR 322.

10. Marker.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the production process of Single Cell Protein (SCP).

Or

(b) Give a brief account on algae genomics.

12. (a) Briefly explain about the antagonism and amensalism with suitable examples.

Or

(b) How the *Pseudomonus* sp acts as bacterial insecticide?

13. (a) Define cytokines and their types.

Or

(b) Illustrate anaerobic digestion system of biogas production.

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

Or

(b) What are the ethical issues raised by genetically modified microorganisms?

15. (a) What are the advantages of Bt cotton over non Bt cotton.

Or

(b) Give a brief account on bacterial insecticide-*Bacillus sp.*

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give a detailed account on construction of transformation and expression vectors.

17. Explain in detail about the VAM fungi.

18. Give a detailed note on tissue plasminogen activator.

19. Explain in detail about the molecular tools used in genetic engineering of microorganism.

20. Explain in detailed about the different methods used in immobilization of microorganisms.

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D–4601

Sub. Code
36443

DISTANCE EDUCATION

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

Fourth Semester

BIOINFORMATICS AND BIOSTATISTICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL 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 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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