AF-2033 **MMI5E1**

M.Sc. DEGREE EXAMINATION, APRIL 2010

Microbiology

Elective - BIOSTATISTICS

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 Marks

Part - A (10 × 2 = 20)

Answer **All** questions
All questions carry equal marks

1. What is mode ?

2. What is range ?

3. What is a graph ?

4. What is numerical data ?

5. What is normal curve ?

6. What is confidence interval ?

7. Define the term 'Probability'.

8. What is gene pool ?

9. What is dependent variable ?

10. What is null hypothesis ?

Part - B (5 × 5 = 25)

Answer **All** questions
All questions carry equal marks

11. (a) Calculate the geometric mean of the following :—

50, 72, 54, 82 and 93.

(*Or*)

(b) Calculate the value of median from the following data :—

x	4	5	6	7	8	9
f	8	10	9	6	5	3

12. (a) Give an account of frequency distribution.

(*Or*)

(b) The given data indicate the number of colonies of aspergilli and penicillia in different field soils. Represent the data by means of a multiple bar diagram.

Field	No of Colonies	
	Aspergilli	Penicillia
Paddy	95	35
Sugarcane	100	45
Wheat	85	30
Groundnut	110	55

13. (a) Give an account of standard error and its utility.

(*Or*)

(b) What do you know about the confidence interval of a mean.

14. (a) What do you know about critical values or significant values ?

(*Or*)

(b) Give an account of genotype frequencies.

15. (a) Give an account of the types of correlation.

(*Or*)

(b) What do you know about the line of best fit.

Part - C

$(3 \times 10 = 30)$

Answer any **Three** questions
All questions carry equal marks

16. Give an account of measures of central tendency.

17. Give an account of the method of graphic presentation of data.

18. Give an account of Gaussian distribution.

19. Give an account of the procedure for testing of hypothesis.

20. Find out the coefficient of correlation from the following data :—

X	65	66	67	67	68	69	71	73
Y	67	68	64	68	72	70	69	70

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AF-2019 MMI1C2

M.Sc. DEGREE EXAMINATION, APRIL 2010

First Semester

Microbiology

BIOCHEMISTRY

(CBCS—2008 onwards)

Duration : 3 Hours Maximum : 75 Marks

Section - A (10 × 2 = 20)

Answer **All** questions.

1. How water acts as solvent for sodium chloride ?

2. Define : Inorganic Compounds.

3. Define : Mitochondria.

4. Define : Selective permeability.

5. Define : ATP.

6. What is dehydrogenation ?

7. Define : Anabolism.

8. What is meant by animation ?

9. What is exoenzyme ?

10. Define coenzyme.

Section - B

(5 × 5 = 25)

Answer **All** the questions.

11. (a) What is the role of buffer in biological system ?

Or

(b) Write an account on simple lipids.

12. (a) Give an account on oxidative phosphorylation.

Or

(b) Describe the structure of plasma membrane.

13. (a) Describe phosphorylation types for ATP synthesis

Or

(b) Briefly explain the metabolic pathway of energy production.

14. (a) What are the enzyme involved in TCA cycle ?

Or

(b) Briefly describe the lipid metabolism.

15. (a) Write short notes on riboenzyme

Or

(b) Briefly explain immobilization of enzyme and its application.

Section -C (3 × 10 = 30)

Answer any **Three** of the following questions.

16. Write an essay on the classification of carbohydrates.

17. Write an essay on the mechanism of membrane transport.

18. Explain the biological oxidation - reduction reactions.

19. Write an essay on nucleotide metabolism.

20. Write an essay on nomenclature and classification of enzyme.

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AF-2020 MMI1C3

M.Sc. DEGREE EXAMINATION, APRIL 2010

First Semester

Microbiology

MICROBIAL PHYSIOLOGY

(CBCS—2008 onwards)

Duration : 3 Hours Maximum : 75 marks

Section - A (10 × 2 = 20)

Answer **All** questions.

1. What are the laws of thermodynamics ?

2. Write an account on energy bonds.

3. Elucidate the structure of chlorophyll.

4. Define anoxygenic photosynthesis.

5. List the functions of ATP.

6. Differentiate homo and heterolactic fermentation.

7. How does exospores are formed by *Streptomyces griseus* ?

8. Brief the structure of Bacillus endospore.

9. What are osmophilic bacteria ?

10. What is cell signalling ?

Section - B

(5 × 5 = 25)

Answer **All** the questions.

11. (a) Write about the role of electron carriers in oxidation-reduction reactions.

Or

(b) Short notes on : (i) inhibitors.

(ii) Electron acceptors,

12. (a) Compare purple nonsulphur and green sulphur bacterial photosynthesis.

Or

(b) Define anabolism. Briefly write an account on gluconeogenesis.

13. (a) Narrate C_3 pathway.

Or

(b) Illuminate in detail about C_4 pathway.

14. (a) Give an account on oxidative phosphorylation.

Or

(b) Briefly describe the sporogenesis of Bacillus megaterium

15. (a) What is bioluminescence ? Give its applications.

Or

(b) What is starvation ? Give examples for each extremophiles.

Section - C

$(3 \times 10 = 30)$

Answer any **Three** questions.

16. Write an essay on basic aspects of bioenergetics, electron donors and acceptors.

17. Describe the mechanism of photosynthesis in cyanobacteria.

18. Define fermentation. Explain the carbohydrate fermentation with metabolic pathways.

19. Write shorts notes on :

    (a) Akinetes.
    (b) heterocyst.
    (c) Chemotaxis.
    (d) *Photobacterium.*

20. Define Quorum sensing. Explain its mechanism and applications.

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AF-2021 MMI1E1

M.Sc. DEGREE EXAMINATION, APRIL 2010

First Semester

Microbiology

Elective— COMPUTER APPLICATIONS AND BIOINFORMATICS

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 Marks

Part - A (10 × 2 = 20)

Answer **All** questions.

1. LINUX.

2. Define an OS.

3. What is meant by DBMS ?

4. B-tree.

5. EMBnet.

6. Heterologous sequences.

7. Lasergene.

8. PHYLIP.

9. Define gene chip.

10. What is known as extrinsic approach of gene finding ?

Part -B (5 × 5 = 25)

Answer **All** questions.

11. (a) Describe the architecture of ARPANET.

Or

(b) Write short notes on fourth generation computer hard wares.

12. (a) Explain integrated circuit card and their applications.

Or

(b) List functional groups of protocols and methods in internets.

13. (a) Give an account in Smith-Waterman algorithm.

Or

(b) Describe on dynamic programming.

14. (a) Explain the mechanisms profile search in protein structure prediction.

Or

(b) List out the methods used for molecular phylogenetics.

15. (a) Explain on microfluidic Sanger sequencing method.

Or

(b) Briefly describe about comparative genomics.

Part -C

(3 × 10 = 30)

Answer any **Three** of the following questions.

16. Discuss in detail about various parts and functions of a computer.

17. Elaborate on databases architecture, types, models and appli cations.

18. Write an essay on different biological databases available.

19. Explain on the different types of protein structure predictions.

20. Write an essay on drug designing.

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AF-2022 MMI2C1

M.Sc. DEGREE EXAMINATION, APRIL 2010

Second Semester

Microbiology

MOLECULAR BIOLOGY AND MICROBIAL GENETICS

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 Marks

Part - A (10 × 2 = 20)

Answer **All** the questions.

1. Tautomerism.
2. Define transforming principle.
3. What is meant by amplification or gene duplication ?
4. Reactive oxygen Species.
5. Horizontal gene transfer.
6. Electroporation.
7. xis and int.
8. DNA gyrase.
9. Define TBP.
10. Anisomycin.

Part - B (5× 5 = 25)

Answer **All** the questions.

11. (a) Describe on mutant nomenclature with suitable examples.

Or

(b) Write short notes on revertant.

12. (a) Explain the role of alpha particles in mutation.

Or

(b) Elaborate on the mechanism of photoreactivation.

13. (a) Give an account on reterotransposons.

Or

(b) Describe on artifical competence.

14. (a) Explain the mechanisms of dynamics at replication fork.

Or

(b) How integration of lambda phage takes place ?

15. (a) Describe the strategies involved in ubiquitination.

Or

(b) Briefly describe about beta galactoside permease.

Part - C

$(3 \times 10 = 30)$

Answer any **Three** questions.

16. Discuss in detail about Hershey-Chase experiment.

17. Elaborate on DNA repair mechanisms in detail.

18. Write an essay on complex and compound transposons.

19. Explain on the biology of bacteriophage lambda.

20. Write an essay on post translational modifications.

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AF-2023 **MMI2C2**

M.Sc. DEGREE EXAMINATION, APRIL 2010

Second Semester

Microbiology

ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 Marks

Part - A (10 × 2 = 20)

Answer **All** the questions.

1. Define smog.

2. Greenhouse gases.

3. What is meant by combined sewer ?

4. Activated sludge.

5. PAHs.

6. Rhizofilteration.

7. Denintrification.

8. Desulfuration.

9. *Verticillium sp.*

10. What is known as entomopathogenic virus ? Give an example.

Part - B (5× 5 = 25)

Answer **All** the questions.

11. (a) Describe the chemical steps involved in the formation of an acid rain.

Or

(b) Write short notes on the sources of water pollution.

12. (a) Explain the pretreatment process for sewage treatment.

Or

(b) List some important features of oxidizing beds.

13. (a) Give an account on mycoremediation methods.

Or

(b) Describe the bio-transformation process.

14. (a) Diagrammatically illustrate the carbon cycle in the biosphere.

Or

(b) Illustrate on the phosphorous cycle in aquatic environment.

15. (a) Name few ascomycets fungi causing plant diseases.

Or

(b) Briefly describe about red rot of sugercane.

Part - C

(3 × 10 = 30)

Answer any **Three** questions.

16. Discuss in detail about sources, types and effects of noise pollution on animals and plants.

17. Elaborate on primary, secondary and tertiary treatment systems for sewage.

18. Write an essay on different methods of soil waste management.

19. Explain on the mechanism of biological nitrogen fixation and differentiate between bacterial and cyanobacterial nitrogen fixation with suitable example.

20. Write an essay on Biopesticides.

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AF-2024 **MMI2C3**

M.Sc. DEGREE EXAMINATION, APRIL 2010

Second Semester

Microbiology

FERMENTATION TECHNOLOGY

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 Marks

Part - A (10 × 2 = 20)

Answer **All** the questions.

1. List the screening methods for antibiotic producer.

2. What is protoplast fusion ?

3. List the sensors used in fermenter.

4. How do you immobilize the enzyme by Entrapment method ?

5. What is tower fermentor ?

6. Write the importance of Kla determination.

7. List the source and uses of Glutamic acid.

8. What are Hops ?

9. What is Foam separation ?

10. Write the role of crystallization in down stream process.

Part - B (5× 5 = 25)

Answer **All** the questions.

11. (a) Briefly describe screening method for growth factor producer form soil.

Or

(b) Describe the use of auxotrophs for production of primary metabolites with examples.

12. (a) Define production Media, Explain the various raw materials used as carbon and nitrogen sources in production media preparation.

Or

(b) What is immobilization ? Give an account on immobilization methods.

13. (a) Write note on the scale up and scale down in fermentation.

Or

(b) Give an account on computer applications in fermentation technology

14. (a) Briefly describe the production of Vitamin B12.

Or

(b) Give an account on the production of Amylase from Aspergillus sp.

15. (a) Give an account on the Filtration methods used in recovery and purification process.

Or

(b) Write a note on Fermentation economics and cost analysis.

Part - C (3 × 10 = 30)

Answer any **Three** questions.

16. Explain the various methods of strain improvement of industrially important microorganisms.

17. Illustrate the design of typical fermentor with neat sketch.

18. What is Red Wine ? Discuss in detail about industrial production Wine.

19. Describe the commercial production of Penicillin G..

20. Schematically explain the various steps in down stream process to recover the intracellular metabolites.

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AF-2025 **MMI2E1**

M.Sc. DEGREE EXAMINATION, APRIL 2010

Second Semester

ELECTIVE II-MARINE MICROBIOLOGY

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 Marks

Part - A (10 × 2 = 20)

Answer **All** the questions.

1. Viable count.
2. PCC.
3. RAPD.
4. Give some examples for psychrophiles.
5. PCBs.
6. Bioaugmentation.
7. What is known as C3 pathway ?
8. Phycocyanin.
9. 5' bromouracil.
10. Pyrosequencing.

Part - B (5× 5 = 25)

Answer **All** the questions.

11. (a) List out some of the chemotaxonomical methods used for bacterial, classification

Or

(b) Write short notes on pure culture techniques.

12. (a) How the ecxtremophilic organisms survive ? Eloborate on the mechanism of adaptation.

Or

(b) Add a note on RAPD

13. (a) Give an account on degradative plasmids.

Or

(b) Describe on pesticide bioremediation.

14. (a) Diagrammatically illustrate the glycoxylate pathway.

Or

(b) Write short notes on symbiosis and orgin of chloroplast

15. (a) Explain about the Griffith experiment with diagram.

Or

(b) How gene sequences are annotated ?

Part - C

(3 × 10 = 30)

Answer any **Three** questions.

16. Discuss in detail about modern molecular tools used for the identification and classification of microorganisms.

17. Classify extremophilic organisms in detail. Add a note on comparative genomics of extremophiles.

18. Write an essay on biodegradation of xenobiotic compounds.

19. Explain on TCA cycle with suitable diagram and illustrate the net ATP production during the process.

20. Write an essay on physical mapping and DNA barcoding.

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AF - 2026 **MMI3C1**

M.Sc. DEGREE EXAMINATION, APRIL 2010

Third Semester

Microbiology

MEDICAL BACTERIOLOGY

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 Marks

Part - A (10 × 2 = 20)

Answer **All** questions

1. How do you examine the sputum ?

2. What is probiotics ?

3. What is Eleck's test ?

4. What is Mc Fadyean's reaction.

5. List the biochemical test used for identification of Mycobacteria

6. Name the toxins and enzyme produces by *Helicobacter pylori*

7. Define satellitism

8. What is Eaton's agent ?

9. What is Nosocomial infection ?

10. Define meningitis.

Part - B (5 × 5 = 25)

Answer **All** questions

11. a. What is Normal flora ? Briefly write note on normal flora in Human body.

(*Or*)

b. Briefly describe the virulence factors in bacteria.

12. a. Describe the pathogenesis, transmission and diagnosis of tuberculosis.

(*Or*)

b. Describe the diseases caused by *Streptococcus pyogens*

13. a. What is Cholera ? Write a short note on the diagnosis and treatment of Cholera ?

(*Or*)

b. Give an account on causative agent, pathogenesis, treatment of typhoid.

14. a. Briefly describe the pathogenesis and diagnosis of Brucellosis

(*Or*)

b. Give an account on pathogenesis and diagnosis of Chlamydiae.

15. a. Give an account on the diagnosis of STD

(*Or*)

b. Write a note on Pyrexia of unknown origin.

Part - C

(3 × 10 = 30)

Answer any **Three** questions.

16. Explain the collection and bacteriological examination of stool specimen.

17. Describe the pathogenesis and lab diagnosis of *Staphylococcus* infection.

18. Explain the Pathogenesis and laboratory diagnosis of *Escherichia coli*.

19. Discuss the diseases caused by Rickettsiae.

20. What is UTI ? Schematically explain the bacteriological diagnosis of UTI

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AF - 2027 **MMI3C2**

M.Sc. DEGREE EXAMINATION, APRIL 2010

Third Semester

MICROBIOLOGY

VIROLOGY, MYCOLOGY AND PARASITOLOGY

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 marks

Part - A (10 × 2 = 20)

Answer **All** Questions.
Draw Diagrams Wherever Necessary
All Questions Carry Equal Marks.

1. What is serodiagnosis ?

2. What are antiviral drugs ?

3. What are obligate parasites ?

4. Distinguish between lytic and lysogenic cycle.

5. What is 'mosaic' symptom ?

6. What are the vectors of viruses ?

7. What is amoebiosis ?

8. What is *Ascaris* ?

9. What are mycoses ?

10. What is systemic mycosis ?

Part - B (5 ×5 = 25)

Answer **All** Questions, choosing either (a) *or* (b) from each **All** Questions carry equal marks.

11. a. Give an account of the structure and properties of prions.

(*Or*)

b. Give an account of nature and properties of interferons.

12. a. Give an account of the pathogenicity and prevention of POX virus.

(*Or*)

b. Give a brief account of HIV

13. a. Give an account of the pathogenicity and control of TMV.

(*Or*)

b. Give an account of the preventive methods of crop protection against Viral infection.

14. a. Give an account of a method of laborotary diagnosis of *Entamoeba*.

(*Or*)

b. Give an account of the life cycle and pathogenicity of *Typanosoma*.

15. a. Give an account of the Causative organism, symptoms and control of candidiasis.

(*Or*)

b. Give a brief account of dermatophytes.

Part - C (3 ×10 = 30)

Answer any **Three** Questions
All Questions carry equal marks.

16. Describe the methods of cultivation of viruses.

17. Give an account of the pathogenicity, diagnosis and prevention of oxcogenic viruses.

18. Give an account of virus - vector relationship in the transmission of viruses in plants.

19. Describe the lifecycle, pathogenicity and diagnosis of *Plasmodium.*

20. Give an account of the causal organism, its infection, symptoms and control of *Aspergillosis.*

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AF - 2028 **MMI 3C3**

M.SC. DEGREE EXAMINATION, APRIL 2010

III SEMESTER

MICROBIOLOGY

IMMUNOLOGY

(CBCS 2008 ONWARDS)

Duration : 3 Hours Maximum : 75 marks

PART - A (10 x 2 = 20)

Answer ALL the Questions

1. Mention the characteristics of collections and toll-like receptors

2. What are the two primary roles of the thymus ?

3. What is immunogen ?

4. Mention the application of RIA

5. Explain the difference between the terms antigen presenting cell and target cell.

6. Define the role of B 2-microglobulin in class I MHC molecule

7 What is the role of cytokinin in type - I hypersensitivity.

8. Explain anaphylatoxins

9. What are the advantages of the sabin polio vaccine compared with the salk vaccine ?

10. List the three types of purified macromolecules that are currently used on vaccine.

PART - B (5 x 5 = 25)

Answer ALL Questions

11.a. Describe the characteristics of Antigen-presenting cell

Or

b. Outline the morphological and functional characteristics of granulocytic cells.

12.a. Describe the Fine structure of immunoglobulin

Or

b. Narrate the clinical uses of monoclonal antibodies.

13.a. Describe the endocytic pathway of exogenous antigen

Or

b. Explain the genomic map of MHC genes with suitable illustration.

14.a. Explain the functions of complements.

Or

b. Describe the characteristics of type III hepersensitivity reactions with an example.

15.a. What is Vaccine ? Add a note on DNA vaccine

Or

b. Explain the characteristics of retrovirus

PART - C (3 x 10 = 30)

Answer any THREE Questions

16. Elucidate the role of lymph nodes in immune response with suitable illustrations.

17. How the immunofluorescence and immunoelectron microscopy are used in the identification of antigen ?

18. Write an essay on exon and intron arrangement of class I and class II MHC gene.

19. What is localized anaphylaxis ? Discuss in detailed about asthma with suitable illustrations.

20. Discuss tumor antigen

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AF -2029 **MMI3E1**

M.SC. DEGREE EXAMINATION, APRIL 2010

Third Semester

Micro - Biology

ELECTIVE - NANO SCIENCE & TECHNOLOGY

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 marks

Part - A (10 × 2 = 20)

Answer **All** Questions.

1. Bionanoscience

2. DNA nanotechnology

3. Crystal

4. Carbon

5. B- sheets

6. Molecular recognition

7. Nucleic acid editing

8. Mechano sensors

9. Nanoscale

10. Nanoglue.

Part - B (5 × 5 = 25)

Answer **All** Questions.

11. a. Give an account on bionanomachines.

(*Or*)

b. How polyalcharides are used in special structural roles ?

12. a How synthetic insulin is produced using recombinant DNA.

(*Or*)

b. Describe the X-ray analysis of crystals.

13. a. Write an account on self organization and molecular recognition

(*Or*)

b. How nanobiotechnology is designed for specific environments ?

14. a. Write notes on biomolecular sensing

(*Or*)

b. Write a brief account on Machine phase bionanotechnology.

15. a. Discuss the role of enzymes in bionanotechnology.

(*Or*)

b. Write the etical considerations of bionano science.

Part - C (3 × 10 = 30)

Answer any **Three** Questions.

16. How biological macromolecular are used for carrying information.

17. Explain the applications of computers in modelling and molecular designing.

18. Mention the hierarchial strategies in construction of nanomachines. Add a note on protein folding.

19. Give an account on nano assembly and chemical transformation.

20. Write a detailed account on present and future of bionanotechnology.

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AF-2030 **MMI 4C1**

M.Sc DEGREE EXAMINATION, APRIL 2010

IV Semester

MICROBIOLOGY

RECOMBINANT DNA TECHNOLOGY

(CBCS - 2008 Onwards)

Duration : 3 Hours Maximum : 75 marks

Part - A (10 × 2 = 20)

Answer **All** Questions.

1. Neoschizomers

2. DNase I

3. T7 and SP6 promoters

4. Kozak sequence

5. Chromosome jumping

6. STRs.

7. List any two softwares for primer designing.

8. How RFLP is differing from AFLP?

9. Pyrosequencing.

10. Primer walking.

Part - B (5 × 5 = 25)

Answer **All** Questions.

11. a. Write short notes on T4/T7 DNA polymerases.

(*Or*)

b. Give an account on different types of thermostable DNA poly merases used in PCR.

12. a. Describe the essential properties of cloning vectors.

(*Or*)

b. Elaborate on gene fusion vectors.

13. a. Discuss the principle behind alpha complementation technique.

(*Or*)

b. Illustrate on methods of labelling nucleic acids.

14. a. Differentiate between the single and multiple RAPD-PCR.

(*Or*)

b. How will you construct primers for specific gene?

15. a. Discuss the high-throughput sequencing.

(*Or*)

b. Briefly describe about PCR mediated mutagenesis.

Part - C (3 × 10 = 30)

Answer any **Three** of the following Questions.

16. Discuss in detail about the various types of restriction endonucleases and their applications in rDNA technology.

17. Elaborate on different types of artificial chromosomes.

18. Write an essay on the principle, procedure and applications of Southern, Western and Northern blotting techniques.

19. Explain on the mechanism of Polymerase Chain Reaction, Optimization and variations in PCR.

20. Illustrate on various strategies employed for whole genome sequencing.

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AF-2031 **MMI4C2**

M.Sc. DEGREE EXAMINATION, APRIL 2010

Fourth Semester

Microbiology

FOOD AND DAIRY MICROBIOLOGY

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 Marks

Part - A (10 × 2 = 20)

Answer **All** questions

1. Write the characteristic of Coliform bacteria.

2. What are intermediate moisture foods ?

3. List the antibiotic food preservatives.

4. Name the methods employed to prevents the moldiness of bread.

5. List the chief market disease of citrus fruits.

6. What is infant botulism?

7. Write the source and reservoir of enteric fever?

8. Name the food control agencies.

9. What is Yoghurt?

10. Comment on soft Pickles.

Part - B (5 × 5 = 25)

Answer **All** questions

11. a. Describe the importance of Yeast in Food Industry.

(*Or*)

b. Write a short note on natural food preservatives.

12. a. Give an account on preservation of food by drying methods.

(*Or*)

b. Write a note on applications of Ultra violet irradiation in food industry.

13. a. Describe the spoilage of meat and meat products.

(*Or*)

b. Write a short note on the spoilage of Poultry products.

14. a. Briefly describe the HACCP concept.

(*Or*)

b. Give an account on viral food borne outbreaks.

15. a. Briefly describe about the oriental fermented foods.

(*Or*)

b. Write a short note on production of Vinegar.

Part - C (3 × 10 = 30)

Answer any **Three** questions

16. Food as a substrate for Micro-organisms - Substantiate

17. List the principal methods of Food preservation. Briefly discuss preservation of food by high temperature.

18. Discuss in detail about the contamination and spoilage of Milk and Milk products.

19. Define Mycotoxins. Explain the food borne outbreak caused by Mycotoxins.

20. What is Cheese ? Describe the steps in production of Cheese.

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AF-2032 **MMI4E1**

M.Sc. DEGREE EXAMINATION, APRIL 2010

Fourth Semester

Microbiology

Elective-IPR, BIOSAFETY AND BIOETHICS

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 Marks

Part - A (10 × 2 = 20)

Answer **All** the questions.

1. World Trade Organization.

2. Singapore Issues.

3. Trademark.

4. Copyright.

5. Patent.

6. Superbug.

7. GLP.

8. Biological safety cabinet.

9. Embryonic stem cells.

10. GMO.

Part - B (5× 5 = 25)

Answer **All** the questions.

11. (a) Write a brief account on functions of GATT.

Or

(b) Give an account or establishment of World Trade Organisations and WTO Summits.

12. (a) Explain the types of IPR.

Or

(b) Write notes on Trade secrets with microbilogical examples.

13. (a) Discuss the case study on patent of basmatic rice and turmeric.

Or

(b) Explain the rules that govern the patents.

14. (a) Describe the guidelines for r DNA research activity with microorganisms.

Or

(b) Write notes on biosafety and its importance.

15. (a) Give an account on bioethics.

Or

(b) What are the ethical issues related to embryonic stem cell cloning ?

Part - C $(3 \times 10 = 30)$

Answer any **Three** questions.

16. Explain the importance of IPR and IBSC.

17. Discuss in the detail trade related aspects of IPR.

18. Write in detail about Indian Patent Act, 1970 and itsamandments.

19. What are the basic components of a Biosafety Laboratory and explain the types of containments.

20. Discuss in detail the general issues related to GM microorganisms.

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AF-2018 **MMI1C1**

M.Sc. DEGREE EXAMINATION, APRIL 2010

First Semester

Microbiology

GENERAL MICROBIOLOGY

(CBCS—2008 Onwards)

Duration : 3 Hours Maximum : 75 Marks

Section - A (10 × 2 = 20)

Answer **All** questions.

1. Archaebacteria.

2. Bacteriophage.

3. TEM.

4. Vaccum tube.

5. Living medium.

6. Sterilization.

7. Capsule.

8. Nucleoid.

9. Chemotherapy.

10. Antibiotic.

Section - B

(5 × 5 = 25)

Answer **All** the questions.

11. (a) Write an account on Whittaker's Five-Kingdom concept.

Or

(b) Briefly describe the general characteristics of monera.

12. (a) Write short notes on Staining process.

Or

(b) Write short notes on resolving power.

13. (a) Briefly describe the lyophilization.

Or

(b) Write notes on bacterial growth curve.

14. (a) Briefly explain the prions.

Or

(b) Write notes on characteristics of Virus.

15. (a) Write an account on production of Antibiotics.

Or

(b) Briefly explain Drug resistance in bacteria.

Section -C

(3 × 10 = 30)

Answer **Three** out of **Five** questions.

16. Discuss in detail about the inner and outer plasma membrane.

17. Explain the working principle and application of Bright Field Light Microscope.

18. Describe in detail about Cultivation methods of anaerobic bacteria.

19. Explain the properties of RNA Virus.

20. Describe is detail about chemotherapy with Antibiotics.

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