M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

First Semester

Microbiology

GENERAL MICROBIOLOGY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Section - A $(10 \times 2 = 20)$

Answer **all** questions.

1.   Martinus Beijerinck.

2.   Archaebacteria.

3.   Confocal microscopy.

4.   Negative staining.

5.   Minor elements.

6. Lag phase.

7. Virions.

8. S layer.

9. Superbug.

10. Aflatoxin.

Section - B   (5 × 5 = 25)

Answer **all** the questions.

11. (a) Write a note on the Woese's system of classification.

(*Or*)

(b) What are the salient features of extremophiles ?

12. (a) Explain the principle behind the working of the Fluorescent Microscope.

(*Or*)

(b) Write short notes on gram staining procedures.

13. (a) Explain the growth curve in bacteria with a neat diagram.

(*Or*)

(b) Differentiate Sterilization from Disinfection. Write a note on various disinfectants used.

14. (a) Explain in detail the prokaryotic cell structure.

(*Or*)

(b) Write a note on prions and the disease they cause.

15. (a) Describe the recovery of oil using microbes.

(*Or*)

(b) Write a note on antibiotic sensitivity assay.

AF-2901

Section - C (3 × 10 = 30)

Answer any **three** questions.

16. Write an essay on the classification of Viruses.

17. Write an essay on the various staining techniques in Microbiology.

18. Write about the nutritional requirements of microbes and their significance.

19. Draw the ultrastructure of the Gram negative cell wall and explain in detail.

20. Classify antibiotics and explain their modes of action.

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AF-2901

M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

First Semester

Microbiology

BIOCHEMISTRY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Section - A   (10 × 2 = 20)

Answer **all** questions.

1. Define Buffer.

2. Define Biomolecules.

3. Define Active transport.

4. What is Phosphorylation ?

5. State the First law of Thermodynamics.

6. Define ATP.

7. Define Catabolism.

8. Define Gluconeogenesis.

9. Define Abzymes.

10. What is Immobilization ?

Section - B $(5 \times 5 = 25)$

Answer **all** the questions.

11. (a)   Write an account on properties of water.

(*Or*)

(b)   Briefly explain the role of buffer in biological system.

12.   (a)   Explain the biological significance of diffusion.

(*Or*)

(b)   Write   an   account   on   Oxidative Phosphorylation.

13.   (a)   Explain the second law of Thermodynamics.

(*Or*)

(b)   Give an account of Redox reactions.

14. (a) Explain the glycolysis pathway.

(*Or*)

(b) Write notes on HMP shunt pathway.

15. (a) Write an account on factors affecting enzyme activity.

(*Or*)

(b) Give an account of enzyme Kinetics.

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

16. Write an essay on the Classification of Carbohydrates.

17. Give an elaborate account on Mitochondrial electron transport chain.

18. Explain the TCA cycle.

19. Write an essay on denovo and salvage pathway.

20. Describe the classification of enzymes.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

First Semester

Microbiology

MICROBIAL PHYSIOLOGY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Section - A   (10 × 2 = 20)

Answer **all** questions.

1. Exospores.

2. Differentiate Electrostatic and Covalent bonding.

3. Phycobiliproteins.

4. Bacteriochlorophylls.

5. Oxidative phosphorylation.

6. Homolactic fermentation.

7. Halophiles.

8. Heterocysts.

9. Cardinal values.

10. Bioluminescence.

Section - B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Write about energy uncouplers.

(*Or*)

(b) Define Bioenergetics and elaborate on it.

12. (a) What are types and functions of chlorophylls?

(*Or*)

(b) Write a short note on Caroteniods.

13. (a) Describe the TCA cycle in detail.

(*Or*)

(b) Elaborate heterolactic fermentation.

14. (a) Explain in detail the process of exospore formation in Streptomyces.

(Or)

(b) Describe the formation of Akinites.

15. (a) Write about the adaptive mechanisms in thermophilic organisms.

(Or)

(b) Elaborate the mechanism of Quorum sensing.

Section - C   (3 × 10 = 30)

Answer any **three** questions.

16. Write about the basic aspects of bioenergetics.

17. Elaborate in detail on oxygenic and anoxygenic photosynthesis.

18. Explain in detail the mechanism of phosphorylation and its types.

19. Give a detailed account on formation of specialized structures by microbes.

20. Explain in detail about the various mechanisms adopted by microorganisms to survive in extreme environments.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

Microbiology

COMPUTER APPLICATIONS AND BIOINFORMATICS (Elective)

(CBCS—2008 onwards)

Time : 3 Hours　　　　　　　　　　Maximum : 75 Marks

Part - A　　　　　(10 × 2 = 20)

Answer **all** questions.

1. UNIX.

2. DOS.

3. Malware.

4. Firewall.

5. Entrez.

6. OMIM.

7. Degenerate primers.

8. RNAViz

9. DNA chips.

10. Drug designing.

Part - B (5 × 5 = 25)

Answer **all** the questions.

11. (a) List out different types of operating systems.

(*Or*)

(b) What is meant by modern computing ? Give some examples.

AF-2904

12. (a) Draw the layers in the internet protocol suite.

(*Or*)

(b) Discuss on the WLAN and WWAN.

13. (a) How will you retrieve information from database ?

(*Or*)

(b) Describe on genome browsers.

14. (a) Give an account on protein threading.

(*Or*)

(b) Brief out the protein structure visualization softwares.

15. (a) Discuss on gene prediction methods.

(Or)

(b) Briefly describe about expression proteomics.

Part - C   (3 × 10 = 30)

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

16. Discuss in detail about open source programming? How it is differing from other operating systems ?

17. Write an essay on internet basics and protocols.

18. Illustrate on the types of phlogenetic tree construction methods with suitable examples.

19. Give an account on Expert Protein Analysis System.

20. Explain about drug designing using bioinformatic tools.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

Second Semester

Microbiology

MOLECULAR BIOLOGY AND MICROBIAL GENETICS

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part - A   (10 × 2 = 20)

Answer **all** questions.

1. Complementation.

2. Reverse genetics.

3. Antifolates.

4. Lex A.

5. IS element.

6. Triparantal mating.

7. Define concatemer.

8. Holiday junction.

9. CpG islands.

10. Promotors and operators.

Part - B $(5 \times 5 = 25)$

Answer **all** the questions.

11. (a) List out some of the natural mutants available.

Or

(b) Write short notes on the methods of genetic analysis of mutants.

12. (a) Discuss on chromosomal translocations.

Or

(b) Diagrammatically illustrate transcription-coupled repair mechanism.

13. (a) Differentiate between generalized and specialized transduction mechanisms.

Or

(b) Briefly out on retrotransposons.

14. (a) Discuss on the dynamics at the replication fork.

Or

(b) Write about the mechanism of prophage integration.

AF-2905

15. (a) List out the mechanisms of transcriptional regulations.

Or

(b) Draw the general structure of an operon.

Part - C (3 × 10 = 30)

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

16. Discuss in detail about types, isolation and characterization of mutants.

17. Elaborate on different types of mutation and their mechanisms.

AF-2905

18. Write an essay on transposable genetic elements.

19. Explain on the mechanism and biology of DNA replication.

20. How lac operon is differing from trp operon ? Diagrammatically illustrate the mechanisms.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

Second Semester

Microbiology

ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part - A $(10 \times 2 = 20)$

Answer **all** the questions.

1. Define ozone depletion.

2. Define fly ash.

3. Trickling filter.

4. Methanogenesis.

5. GMOs.

6. What are the applications of surfactants ?

7. What is ammonification ?

8. Parasitism.

9. Citrus canker.

10. *Frankia*.

Answer **all** questions.

11. (a) Explain the sources, types and effect of environmental pollution.

Or

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

12. (a) Describe the anaerobic treatment methods of industrial effluents.

Or

(b) List out special features of fluidized bed reactor.

13. (a) Describe the bioremediation methods.

Or

(b) Describe the steps involved in the biodegradation of polyaromatic hydrocarbons.

14. (a) Illustrate the nitrogen cycle with suitable diagram.

Or

(b) Explain the mechanism of biological nitrogen fixation by cyanobacteria

15. (a) Explain the symptoms, pathogenesis and control measures of citrus canker.

Or

(b) Describe bacterial biopesticides and give their role in crop protection

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

Answer any **three** questions.

16. Explain in detail sources, types and effects of water pollution on plants and animals

17. Discuss in detail about the conventional and advanced treatment methods of industrial effluents.

18. Describe the role of genetically modified organisms in the biodegradation of waste products.

19. Write an essay on the microbial interactions with suitable example.

20. What is biofertilizer ? Give the types of biofertilizers with example and elaborate the mass production method of Rhizobium.

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AF-2906

M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

Second Semester

Microbiology

FERMENTATION TECHNOLOGY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part - A   (10 × 2 = 20)

Answer **all** the questions.

1. What is protoplast ?

2. List out the screening methods for antibiotic producer.

3. What is the use of fed batch fermentation ?

4. Define immobilization.

5. What is Sparger ?

6. What is the role of baffle ?

7. What are the nutrients present in SCP ?

8. List out the uses of amylase.

9. Define chromatography.

10. Give two example for antifoam agents.

AF-2907

Part - B   (5 × 5 = 25)

Answer **all** questions.

11. (a)   Write short notes on the importance of protoplast culture.

Or

(b)   What are primary and secondary metabolites ?

12. (a)   Briefly explain the encapsulation.

Or

(b)   What are the factors involved in fermentation process.

13. (a) Write short notes on agitation.

Or

(b) Give an account on fluidized fed fermentation.

14. (a) Briefly explain the biogas production.

Or

(b) Write short notes on glutamic acid production.

15. (a) Give an account on solvent extraction.

Or

(b) Write short notes on drum driver.

AF-2907

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

Answer any **three** questions.

16. Write an essay on genetic control of fermentation.

17. Describe in detail about types of fermentor.

18. Write an essay on computer application in fermentation.

19. Write the raw materials and production methods for penicillin.

20. Give a detailed account on centrifugation process.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

Microbiology

MARINE MICROBIOLOGY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Section - A   (10 × 2 = 20)

Answer **all** questions.

1. Virions.

2. ATCC.

3. Endolith extremophiles.

4. Genomics.

5. Xenobiotics

6. Biosurfactants.

7. Bacteriochlorophylls.

8. Phosphorylation.

9. Mutagens

10. Transduction.

Answer **all** the questions.

11. (a) Write a short note on various collection techniques in marine microbes.

Or

(b) Describe the various techniques for enumeration of microbes.

12. (a) Write a short note on xerotolerant organisms with sutiable examples.

Or

(b) Elaborate RAPD and RFLP techniques.

13. (a) What are degradative plasmids ? Add a note on it.

Or

(b) Write a note on diseases affecting marine organisms.

14. (a) Describe the Reverse TCA cycle.

Or

(b) Write a short note on accessory pigments.

15. (a) Write a short note on transposons.

Or

(b) What are barcodes ? In what way are they useful in microbial identification ?

Section- C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about the modern methods employed in classification of microbes.

17. Classify extremophiles and give a detailed account on each class.

AF-2908

18. Elaborate bioremediation. Discuss in detail the factors affecting it.

19. Explain with details the C3 and C4 pathways.

20. Explain in detail about the various gene transfer mechanisms.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

Second Semester

Microbiology

MEDICAL BACTERIOLOGY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Section - A   (10 × 2 = 20)

Answer **all** the questions.

1. How does Pneumococcus resist the phagocytosis ?

2. What are the uses of Stuart medium ?

3. What are bacterial causative agents of dental caries ?

4. What is Schick test ?

5. What is blood culture ?

6. Name the pigments produced by *Pseudomonoas* sp.

7. What are the properties of Rickettsiae ?

8. Define Relapsing fever ?

9. What is Wassermann reaction ?

10. How do you collect the CSF ?

Answer **all** questions.

11. (a) Briefly describe the microscopic and cultural identification of diphtheria bacterial pathogens.

Or

(b) Briefly describe the following Host parasite relationship.

(i) Parasitism.

(ii) Symbiosis.

12. (a) Write a short note on pathogenesis, transmission and diagnosis of anthrax.

Or

(b) What is pulmonary tuberculosis ? Describe the laboratory diagnosis of tuberculosis.

13. (a) What is Gastroenteritis ? How do you classify the pathogenic form *Escherichia coli* ?

Or

(b) Give an account on pathogenesis and diagnosis of Peptic ulcer.

AF-2909

14. (a) Summarize the properties and X and V factors requirements of *Hemophilus* species.

Or

(b) What is actinomycosis ? Write a short note on *Actinomyces* and *Nocardia* infection.

15. (a) Define Nosocomial infection. Brief describe on the Hospital waste disposal.

Or

(b) Write a note on bacteriological diagnosis of UTI.

AF-2909

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

Answer any **three** questions.

16. What are Probiotic ? Discuss the Probiotic property and therapeutic uses of *Lactobacillus* sp.

17. Explain the Virulence factors and infection caused by Group A Streptococci.

18. Discuss the antigenic structure, pathogenesis and laboratory diagnosis of *Salmonella typhi*.

19. Define atypical Pneumonia ? Discuss the pathogenesis and laboratory diagnosis of atypical pneumonia.

20. What is Syphilis ? Explain the pathogenicity and diagnosis of Syphilis.

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AF-2909

M.Sc. DEGREE EXAMINATION, NOVEMBER 2010
Third Semester
Microbiology
VIROLOGY, MYCOLOGY AND PARASITOLOGY
(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Section - A $(10 \times 2 = 20)$

Answer **all** questions.

1. How do you culture the virus ?

2. What are prions ?

3. List the antigens in Influenza virus.

4. Write the transmission Chikungunya Virus infection.

5. Name the arthropod vector in plant Virus transmission.

6. List the systemic symptoms of plant virus infection.

7. Differentiate the *Taeni solium* from *Taenia saginata*.

8. What is 'chagas' disease ?

9. What is visceral cryptococcosis ?

10. Differentiate the *Tinea pedis* and *Tinea barbae*.

Answer **all** questions.

11. (a) What is Viroid ? Briefly write note on structure and properties of Viroids.

Or

(b) Briefly describe the detection methods of viruses in the clinical samples.

12. (a) Define Rabies. Briefly describe the transmission, pathogenesis and Prophylaxis of Rabies.

Or

(b) Write a short note on transmission and diagnosis of AIDS.

13. (a) Write a short note on transmission of plant viruses with vectors.

Or

(b) Give an account on symptoms and transmission of cauliflower mosaic virus.

14. (a) Briefly describe the pathogenesis and diagnosis of *Entamoeba histolytica*.

Or

(b) Give an account on pathogenesis and diagnosis of Ascariasis.

AF-2910

15. (a) Give an account on pathogenesis and diagnosis the Aspergillosis.

Or

(b) Write a note on pathogenesis and diagnosis Candidiasis.

Section - C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the mode of action and therapeutic applications of antiviral drugs.

17. Discuss in detail about the pathogenesis, diagnosis of Hepatitis.

AF-2910

18. Explain the pathogenesis, symptoms and transmission of tobacco mosaic virus.

19. Discuss the pathogenesis and laboratory diagnosis of *Plasmodium* sp.

20. What is systemic mycosis ? Explain the pathogenesis and laboratory diagnosis of Histoplasmycosis and Blastomycosis.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

Third Semester

Microbiology

IMMUNOLOGY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Section - A   (10 × 2 = 20)

Answer **all** questions.

1. Who invented the role of phagocytes in Immunity ?

2. How do skin act as mechanical barrier in defense mechanism ?

3. What are Adjuvants ?

4. What is ASO test ?

5. Comment on Clonal selection theory.

6. How does HLA typing useful in transplantation ?

7. Define Edible vaccine.

8. List the uses of Lal test.

9. What are agammaglobulinemia ?

10. Tuberculin reaction is delayed Hypersensitivity -Justify.

AF-2911

Answer **all** questions.

11. (a) Briefly describe the Innate immunity.

Or

(b) Write a short note on chronological events in Immunology.

12. (a) Give an account on principle and applications of Precipitation reactions.

Or

(b) Write a note on steps and uses of Immunofluorescence technique

13. (a) What are Interleukins How does different interleukin regulates the immune response ?

Or

(b) Briefly described the antibody mediated immune response.

14. (a) Describe the classical pathway of complement systems.

Or

(b) Give an account on synthetic peptide and DNA vaccine.

15. (a) Describe the immunological tolerance mechanisms.

Or

(b) Write a short note on Immune systems in AIDS.

Part - C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the structure and functions of Thymus with illustration.

17. Discuss the structure and types of immunoglobulin.

AF-2911

18. What is MHC ? Discuss in detail about structural organization and types of MHC.

19. Describe the immediate hypersensitivity with examples.

20. Define Allograft. Explain the immunological mechanism of allograft rejection with suitable examples.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010
Microbiology
Elective—NANO SCIENCE AND TECHNOLOGY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part - A   (10 × 2 = 20)

Answer **all** the questions.

1. Bionano material

2. Polysaccharides

3. NMR active nuclei

4. Electrons

5.   Bionanotechnology

6.   Nanomachine

7.   Carbon nanotubes

8.   Nano assembly

9.   Sticky finger

10.   Nanotube

Answer **all** the questions.

11 (a) How proteins are used to carry information ?

(*Or*)

(b) Describe the present status of binano technology.

12. (a) Write a brief account on rDNA technology.

(*Or*)

(b) How electron microscopy is used in nanotechnology ?

13 (a)   Describe the protein folding mechanism.

(*Or*)

(b)   Write briefly on the role of molecular recognition in biological systems.

14 (a)   How nucleic acids carry genetic information ?

(*Or*)

(b)   Give a brief account on chemical transformation.

15 (a)   Explain the Abide finger problem and its remedy.

(*Or*)

(b) Write short notes on ethical considerations of bionanotechnology.

Part - C   (3 × 10 = 30)

Answer any **three** questions.

16. Give an account on Bionanomachines.

17. Describe the role of NMR spectroscopy and X-ray crystallography in nanoscience.

18. What are the hierarchial strategies in the construction of nanomachines ?

AF-2912

19. Give an account on functional principles of bionanotechnology.

20. Write an essay on future bio-nanotechnology.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

Fourth Semester

Microbiology

RECOMBINANT DNA TECHNOLOGY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part - A   (10 × 2 = 20)

Answer **all** questions.

1. S1 nuclease

2. Pfu polymerase

3. Define multiple cloning sites.

4. pUC19

5. Alpha complementation

6. T-RFLP

7. Touchdown PCR

8. Define QTL

9. What is the function of apyrase ?

10. Cassette mutagenesis.

Answer **all** questions.

11 (a) Write short notes on Bal 31 and EXO III enzymes.

(*Or*)

(b) Describe about DNA dependent RNA polymerases.

12. (a) Give some examples of expression vectors for eukaryotes.

(*Or*)

(b) Discuss on Human Artificial chromosomes.

13 (a) How DNA labelling was done ? Illustrate on the mechanisms.

(*Or*)

(b) What is meant by chromosome jumping ?

14 (a) Differentiate between the hot-start and touchdown - PCR.

(*Or*)

(b) Describe on the method of PCR-optimization.

15 (a) Discuss on gene modification through oligonucleotide-mediated mutagenesis.

(*Or*)

AF-2913

(b)   Brief sequencing by hybridization.

Part - C   (3 × 10 = 30)

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

16.   List out the different types of thermostable DNA
      polymerases used in PCR and differentiate
      between them with respect to the functions.

17.   Write in detail about phagemids and add a note
      on Bluescript and other commercially available
      vectors.

18.   Explain the method of constructing genomic and
      cDNA libraries.

AF-2913

19. Discuss in detail about the principle, procedure and applications of AFLP.

20. Describe on high throughout methods of DNA sequencing.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010

Fourth Semester

Microbiology

FOOD AND DAIRY MICROBIOLOGY

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part - A   (10 × 2 = 20)

Answer **all** the Questions.

1. Write the characteristic features of enteric bacteria.

2. What are the intrinsic factors affecting the growth of bacteria ?

3. Substantiate – antibiotic as a food preservatives.

4. Give the role of UV rays in the food preservation.

5. Define ropiness.

6. Write about the bacterial fish pathogens.

7. What is bacterial food intoxication ?

8. Write the sources and reservoir of Dengue fever.

9. What is kemp ?

10. What are oriental fermented foods ?

Part - B   (5 × 5 = 25)

Answer **all** the Questions.

11 (a) Give the general characteristics and importance of yeast in food industry.

(*Or*)

(b) Define water activity. Discuss how the moisture and water activity influence the growth of micro-organisms in food.

12. (a) Write about the use of low temperature in food preservation.

(*Or*)

(b) Give a brief summary on pasteurization.

13 (a) Narrate about the microbial spoilage of fruits and vegetables.

(*Or*)

(b) Describe the spoilage of meat and meat products.

AF-2914

14 (a) Write a note on mycotoxins.

(*Or*)

(b) Give an account on fungal food borne outbreaks.

15 (a) Briefly describe about bread and vinegar production.

(*Or*)

(b) Write an account on food standards and measure for quality control.

Part - C (3 × 10 = 30)

Answer any **three** Questions.

16. Substantiate "Food as substrate for microorganisms".

AF-2914

17. Elaborate on the process of food preservation using food additives and asepsis.

18. Describe the contamination and spoilage of poultry and eggs.

19. Write an essay on food borne diseases.

20. What is fermentation ? Describe the steps in production of yoghurt.

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M.Sc. DEGREE EXAMINATION, NOVEMBER 2010
Microbiology
Elective—IPR, BIOSAFETY AND BIOETHICS
(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part - A   (10 × 2 = 20)

Answer **all** the Questions.

1. Biosafety.

2. RCGM.

3. Patent.

4. Author's right.

5. IPA.

6. Contamination.

7. OECD.

8. Transgenic plant.

9. Bioethics.

10. Clone.

Part - B (5 × 5 = 25)

Answer **all** Questions.

11 (a) Describe the organizational structure of WTO.

(*Or*)

(b) Write a brief account on IBSC.

12. (a) Give a brief account on patents in relation to Microbiology.

(*Or*)

(b) Describe the symbols and fundamental concepts of Trade mark.

13 (a) How patents are registered in India ?

(*Or*)

(b) Write about the case study of Neem tree and products.

AF-2915

14 (a) Explain the principles of GLP.

(*Or*)

(b) Write notes on containment systems in the laboratory.

15 (a) Write a brief account on bioethics in Microbiology research.

(*Or*)

(b) Explain the perspectives and methodology of Bioethicists.

AF-2915

16. Describe the various trade rounds and achievements of GATT and WTO.

17. Write in detail about the trade related aspects of IPR.

18. Give an account on Indian Patent Act, 1970 and its amendments.

19. Explain the guidelines for rDNA research activities in Micro-organisms.

20. Discuss in detail the ethical related to the research in embryonic stem cell cloning.

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AF-2915

M.Sc. DEGREE EXAMINATION, NOVEMBER 2010
Microbiology
Elective—BIOSTATISTICS

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part - A   (10 × 2 = 20)

Answer **all** the Questions.

1. Mean.

2. Standard deviation.

3. Histogram.

4. Kurtosis.

5. Confidence interval.

6. ANOVA.

7. P-value.

8. Allele frequency.

9. Correlation coefficient.

10. Bayes' theorem.

Part - B   (5 × 5 = 25)

Answer **all** the Questions.

11. (a) Write short notes on measures of Central tendency.

(*Or*)

(b) Explain Chebychev's inequality.

12. (a) Describe scatter plots and line graphs

(*Or*)

(b) Explain the various types of numerical data.

13. (a) Write short notes on Gaussian distribution and properties.

(*Or*)

(b) Explain and interpret the confidence interval and its relation to hypothesis testing.

14. (a) Give an account on multiple comparisons with an example.

(*Or*)

AF-2916

(b) Write short notes on statistical significance and hypothesis testing.

15. (a) What is linear regression and simple correlation ?

(*Or*)

(b) Give an account on regression analysis and its types.

Part - C   (3 × 10 = 30)

Answer any **three** Questions.

16. Explain the interquartile range of distributions and uses.

AF-2916

17. Write the rules for the construction of table and mention the types of tables.

18. Describe the confidence interval of a mean and survival curves.

19. Write in detail the fundamentals, scope and processes of population genetics.

20. Bring out the basic ideas of test of significance and level of significance in hypothesis testing.

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