

**FACULTY OF SCIENCE**  
**M.Sc. II-Semester Examination, May/June 2019**

**Subject : Microbiology**  
**Paper – I : Molecular Biology & Microbial Genetics**

**Time : 3 Hours**

**Max. Marks: 80**

**Note : Answer all questions from Part–A and Part–B. Each question carries 4 marks in Part–A and 12 marks in Part – B.**

**PART – A (8X4=32 Marks)**  
**(Short Answer Type)**

1.  $T_m$  value
2. DNA polymerase
3. Promoters
4. Ribozyme
5. U V mutagenic agent
6. Mismatch Repair
7. Rec. A
8. Sex-duction

**PART – B (4x12=48 Marks)**  
**(Essay Answer Type)**

9. (a) List out the enzymes involved in DNA replication with their significance.  
**OR**  
(b) Describe the Genomic organization in Eukaryotes.
- 10.(a) Describe in detail transcription process in prokaryotes.  
**OR**  
(b) Narrate the post translational modifications in Eukaryotes.
- 11.(a) Explain the detection and analysis of mutations.  
**OR**  
(b) Give an account on types of transposons and their applications.
- 12.(a) What is interrupted mating? How it is used for linkage mapping?  
**OR**  
(b) Describe in detail the process of specialized transduction and its importance.

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**Subject: Microbiology**  
**Paper – II: Environmental & Agriculture Microbiology**

**Time: 3 Hours**

**Max. Marks: 80**

**Note : Answer all questions from Part–A and Part–B. Each question carries 4 marks in Part–A and 12 marks in Part – B.**

**PART – A (8X4=32 Marks)**  
**(Short Answer Type)**

1. Oxidation ponds
2. Indoor air micro flora
3. Soil Bacteria
4. DDT
5. Cellulases
6. Nitrate pollution
7. Nodulation
8. Quality control tests of Biofertilizers

**PART – B (4x12=48 Marks)**  
**(Essay Answer Type)**

9. (a) Write a detailed note on steps involved in accessing sanitary quality of water.  
**OR**  
(b) Explain in detail the methods of aerobic sewage treatment.
- 10.(a) Elucidate the microbial degradation of organic pollutants.  
**OR**  
(b) Describe the different methods of enumeration and activity of microbes in the environment.
- 11.(a) What is nitrification? Explain about the organisms involved and their significance in nitrogen cycle.  
**OR**  
(b) Give an account of biochemistry of lignin decomposition and humus formation.
- 12.(a) What are biofertilizers? How are they advantageous over the chemical fertilizers?  
**OR**  
(b) Give in detail the biochemistry and genetics of nitrogen fixation.

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Subject : Microbiology  
Paper – III : Immunology

Time : 3 Hours

Max. Marks: 80

Note : Answer all questions from Part–A and Part–B. Each question carries 4 marks in Part–A and 12 marks in Part – B.

**PART – A (8X4=32 Marks)**  
**(Short Answer Type)**

1. Clonal selection theory
2. Structure of B Cell receptors
3. Peripheral immunological tolerance
4. HLA
5. Agglutination
6. Immunofluorescence
7. Anti-idiotypic vaccines
8. Immune evasion

**PART – B (4x12=48 Marks)**  
**(Essay Answer Type)**

9. (a) How is genomic rearrangement used for generating T cell receptor diversity?  
OR  
(b) Define antigen. Write on different types of antigens and their properties.
- 10.(a) What is immunity? Explain about Natural and acquired immunonity.  
OR  
(b) Write on the immune response during bacterial infections taking tuberculosis as a model.
- 11.(a) Differentiate ELISA and RIA. Explain their importance for diagnostic applications.  
OR  
(b) What is hypersensitivity? Explain its delayed type reactions and their significance.
- 12.(a) What is hybridoma technique and how is it important for mass production of antibodies?  
OR  
(b) Explain the phenomenon of immunosuppression and its practical importance.

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Subject : Microbiology  
Paper – IV : Pharmaceutical Microbiology

Time : 3 Hours

Max. Marks: 80

Note : Answer all questions from Part–A and Part–B. Each question carries 4 marks in Part–A and 12 marks in Part – B.

**PART – A (8X4=32 Marks)**  
**(Short Answer Type)**

1. Precipitation test
2. Packing of Pharmaceutical Products
3. Nalidixic acid
4. Paul Ehrlich
5. Polymyxin
6. Beta-lactams
7. Phenol coefficient
8. Pharmacokinetics

**PART – B (4x12=48 Marks)**  
**(Essay Answer Type)**

9. (a) Discuss on the types of micro organisms affecting pharmaceutical products.  
OR  
(b) Explain Good manufacturing practices adopted in Pharmaceutical industries.
- 10.(a) Discuss on the selective toxicity and target sites of drug action in microorganisms.  
OR  
(b) Write on essay on plants and arsenicals as therapeutics.
- 11.(a) What are macromolecular synthesis inhibitors? Write their mode of action.  
OR  
(b) Explain the choice of drug dosage and route of administration for a particular disease.
- 12.(a) Write on microbiological assays for growth promoting substances and amino acids.  
OR  
(b) Discuss on the different assays for antibiotics testing.

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