

FACULTY OF SCIENCE

M.Sc I-Semester (CBCS) Examination, December 2018, January 2019

Subject : Microbiology

Paper –I : General Microbiology and Microbial Physiology

Time: 3 Hours

Max. Marks : 80

Note: Answer All questions From Part-A and Each Question Carries 4 Marks in Part-A and 12 Marks in Part-B

**PART-A (8 x 4 = 32 Marks)**  
(Short Answer Type)

1. Electron Microscope
2. Structure of bacterial endospore
3. Autotrophic media
4. Freeze-drying
5. Staining methods
6. Numerical taxonomy
7. Cell cycle in microbes
8. Microbial growth measurements

**PART-B (4 x 12 = 48 Marks)**  
(Essay Answer Type)

9. a) Write an essay on organization and function of cell organelles in eukaryotic cell.  
OR  
b) Explain the principle and applications of bright field and fluorescent microscopes.
10. a) Give a detailed account on cultivation methods of bacteria and fungi  
OR  
b) Describe the methods of sterilization and disinfection.
11. a) Write an essay on classification of bacteria.  
OR  
b) Give a detailed account on photoautotrophic and chemiautotrophic metabolism of bacteria.
12. a) Write an essay on growth phases of bacteria.  
OR  
b) Describe the synchronous and continuous culturing methods of bacteria.

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**FACULTY OF SCIENCE**

**M.Sc I-Semester Examination, December 2018 / January 2019**

**Subject : Microbiology**

**Paper - II : Virology**

**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 (8 x 4 = 32 Marks)  
(Short Answer Type)**

1. Viral Symmetry
2. RNA – DNA hybrid virus
3. Clathrin Coated Pits
4. Structure of Influenza Virus
5. Phenotypic mixing
6. Chemical Anti Viral Agents.
7. Viruses for gene delivery
8. Baculovirus Expression system and it's importance

**PART-B (4 x 12 = 48 Marks)  
(Essay Answer Type)**

9. a) Explain in detail Baltimore system of Classification.  
**OR**  
b) Explain Various Methods used for isolation and Quantification of Viruses.
10. a) Explain in detail structure, genome organization and replication of TMV  
**OR**  
b) Explain in detail steps involved in Lysogenic mode of viral replication
11. a) Describe the nature, source, Classification and induction of Interferons.  
**OR**  
b) Write in detail about Tumor Viruses.
12. a) Write on types of Viral Vaccines and their Preparation.  
**OR**  
b) Explain in detail Viral Vectors used for Cloning and sequencing

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**M.Sc I-Semester Examination, December 2018 / January 2019**

**Subject : Microbiology**

**Paper - III : Research Methodology and Techniques**

**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 (8 x 4 = 32 Marks)**  
**(Short Answer Type)**

1. NMR
2. Optical rotation
3. Diffusion
4. Mutants generation to study metabolic pathways
5. Normal Distribution
6. Linear regression and its importance
7. DOS commands
8. Research ethics

**PART-B (4 x 12 = 48 Marks)**  
**(Essay Answer Type)**

9. a) How MS-spectrometry is used to determine the mass of peptides.  
OR  
b) Explain difference between agarose gel electrophoresis and SDS PAGE and usage of electrophoretic technique.
10. a) Explain the use of gel filtration and affinity chromatography for separation of compounds  
OR  
b) What is Radioisotope? Explain how radioactivity can be detected and measured
11. a) What is Chi-square test and its use to relate theoretical and observed data  
OR  
b) What are the reasons to use ANOVA and DMRT for analyzing biological samples
12. a) Write about Manuscript writing and limits of Plagiarism while making manuscript  
OR  
b) Explain about the GLP and GMP to be maintained in research lab and the role of microbiologist to maintain the same.

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**FACULTY OF SCIENCE**

M.Sc I-Semester Examination, December 2018 / January 2019

**Subject : Microbiology****Paper - IV : Microbial Biochemistry**

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 (8 x 4 = 32 Marks)**  
(Short Answer Type)

1. Henderson- Hasselbalch equation
2. ATP
3. Golgi
4. Properties of Steroids
5. Oxidoreductases
6. Peptide bond
7. Allosteric enzymes
8. Thiamine pyrophosphate

**PART-B (4 x 12 = 48 Marks)**  
(Ess. Answer Type)

9. a) Describe the various steps involved in TCA cycle and its integration  
OR  
b) Define entropy and give a detailed note on free energy
10. a) Classify carbohydrates and explain the cyclic structure of monosaccharides  
OR  
b) Describe the de novo synthesis of purines. Add a note on its regulation.
11. a) What are the various properties of amino acids? Explain the structure and properties of proteins  
OR  
b) How is enzyme activity calculated? Add a note on Km and Lineweaver-Burke plot.
12. a) Give a detailed note on competitive and non-Competitive inhibition  
OR  
b) Illustrate the effect of various inhibitors on enzymes. What is suicide inhibition?