

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

Subject : Microbiology  
Paper – I : Cell and Molecular Biotechnology

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. Protein kinases
2. cAMP
3. Genomic library
4. Transformation
5. DNA finger printing
6. AFLP
7. BLAST
8. Homology modeling

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

9. (a) Explain the regulation of cell cycle. Comment on its significance.  
OR  
(b) Write note on protein folding and their role in molecular chaperones.
- 10.(a) Write about the different types of vectors used in genetic engineering studies?  
OR  
(b) Explain the principles involved and applications of polymerase chain reaction.
- 11.(a) Describe in brief the protein-protein interactions and protein-DNA interactions.  
OR  
(b) Give a short account of site directed mutagenesis and its applications.
- 12.(a) Elucidate in brief about Genome annotation and Gene prediction.  
OR  
(b) Describe the structure based and ligand based drug designing.

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Subject : Microbiology  
Paper – II : Medical Virology and Parasitology

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. Continuous culture
2. Rubella virus
3. Pathogenicity of Hepatitis - A
4. Japanese encephalitis
5. Pathogenicity of small pox virus.
6. Lab diagnosis of HIV
7. Amoebiasis
8. Dermatomycosis

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

9. (a) Write an essay on cultivation methods of pathogenic viruses.  
OR  
(b) Give a detailed account on pathogenicity and Laboratory diagnosis of Influenza virus.
- 10.(a) Explain the pathogenicity. Clinical symptoms, diagnostic methods of Rabies infection.  
OR  
(b) Discuss the pathogenicity, and preventive measures of poliomyelitis.
- 11.(a) Explain the mode of transmission and pathogenicity of HIV.  
OR  
(b) What is Serum Hepatitis? Explain the pathogenesis and clinical findings of the disease.
- 12.(a) Give a detailed account on laboratory diagnosis, prevention and control measures of Malarial infection.  
OR  
(b) Write an essay on systemic mycosis.

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Subject : Microbiology  
Paper – III (A) : Microbial Biotechnology

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. Malting
2. Fermentation of wort
3. Structure of vitamin B12
4. Glutamic acid cycle
5. Semi synthetic penicillins
6. Tetracyclin recovery
7. Proteases
8. Insulin

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

9. (a) Write a detailed note on medium components and inoculum preparation of beer.  
OR  
(b) Describe the principles of wine making and role of micro organisms.
- 10.(a) Write a note on mechanism of citric acid production and its recovery.  
OR  
(b) Describe the fermentative production of glutamic acid.
- 11.(a) What are antibiotics? Give a detailed account on benzyl penicillin production.  
OR  
(b) Describe different types of tetracyclins and the production media used in fermentation process.
- 12.(a) What are amylases? Explain in detail the production of amylase and its applications.  
OR  
(b) What are the genetically modified organisms? Explain their role in industrial applications.

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Subject : Microbiology  
Paper – IV : Applied 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. Cellular respiration in bacteria
2. HMP pathway
3. Bioemulsifiers
4. ATP measurement for detection of microbial pathogens
5. Collar rot disease
6. Biological methods of plant disease management
7. Nanoparticulate carrier
8. Nanofluidics

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

9. (a) Write about the importance of TCA cycle in bacteria.  
OR  
(b) Explain the modification of bacterial metabolic pathways for industrially important products.
- 10.(a) Explain the microbial production of enzymes and their uses.  
OR  
(b) Explain the PCR based methods for identification of pathogenic microbes.
- 11.(a) What is plant disease triangle? Explain the disease caused by *Xanthomonas campestris* and its control measures.  
OR  
(b) Write about the infections caused by *Helicoverpa armigera* and its control measures.
- 12.(a) Define nanotechnology? Explain about the biological and chemical synthesis of nanoparticles and their applications.  
OR  
(b) Explain the perspectives and application of nanomedicine in cancer.