

**M. Sc. DEGREE END SEMESTER EXAMINATION : OCTOBER 2022****SEMESTER 3 : ZOOLOGY****COURSE : 21P3ZOOT11 : MICROBIOLOGY AND BIOTECHNOLOGY***(For Regular - 2021 Admission)*

Duration : Three Hours

Max. Weights: 30

**PART A****Answer any 8 questions****Weight: 1**

1. What are nif genes? (R, CO 8)
  2. What are transgenic animals? (R, CO 7)
  3. What is FISH? (R)
  4. What are bioenergy crops? Give examples (R, CO 8)
  5. What is gene gun method? (R, CO 7)
  6. Differentiate between freeze fracturing and freeze etching (An)
  7. Comment on microorganism-insect mutualisms (U)
  8. Comment on the various glucose-catabolizing pathways found in bacteria (U, CO 2)
  9. Comment on molecular chimeras. (U)
  10. Write notes on TRIPS (U, CO 8)
- (1 x 8 = 8)**

**PART B****Answer any 6 questions****Weights: 2**

11. Write short notes on production of aminoacids (U, CO 8)
  12. Briefly explain the applications of 'Biochips' in modern science. (U, CO 8)
  13. Discuss the components present outside the bacterial cell wall (U)
  14. Brief on Maxam and Gilberts chemical degradation DNA sequencing method (U)
  15. Differentiate between chemical degradation and dideoxy method of DNA sequencing. (An)
  16. Explain the mechanism of microbial pathogenicity (U)
  17. Explain nosocomial infections. (An)
  18. Write in detail about different types of biosensors. (R)
- (2 x 6 = 12)**

**PART C****Answer any 2 questions****Weights: 5**

19. Write an essay on various transfection methods? (U, CO 7)
  20. Comment on the molecular markers used in rDNA technology. (An)
  21. Write an essay on sewage treatment (U, CO 8)
  22. Write in detail about physical and chemical antimicrobial agents. (A)
- (5 x 2 = 10)**

## OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 2	Discuss the advanced concepts of microbial metabolism, nutrition, growth, interactions and ecology	U	8	1
CO 7	Differentiate the various tools and techniques in Animal Biotechnology	An	2, 5, 19	7
CO 8	Extend the advanced concepts of the applications of biotechnology in healthcare, industry, agriculture and environmental biotechnology	U	1, 4, 10, 11, 12, 21	12

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;