NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES

DEPARTMENT OF NATURAL AND APPLIED SCIENCES

QUALIFICATION : BACHELOR OF SCIENCE (HONOURS)	
QUALIFICATION CODE: 08BOSC	**LEVEL:** 8
COURSE CODE: MSP811S	**COURSE NAME:** MICROBIAL SYSTEMATICS AND PROCESSES
SESSION: JULY 2022	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 120

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER(S)	**Prof Percy Chimwamurombe**
MODERATOR:	**Dr Jean-Damascene Uzabakiriho**

INSTRUCTIONS
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly.

PERMISSIBLE MATERIALS

Non-programmable Calculators

ATTACHMENTS

None

THIS QUESTION PAPER CONSISTS OF 2 PAGES (Including this front page)

Section A: ..... [60 marks]

1. Give the evidence which advocates that the prokaryotes were the initial forms of life on earth. (5 marks)
2. Describe the main characteristics that the first living organisms may have had? (5 marks)
3. Elucidate the "RNA world" concept. (5 marks)
4. Give a description of the evolution of Cyanobacteria. (5 marks)
5. Write the proof which support the endosymbiosis hypothesis. (5 marks)
6. Rationalize the usage of ribosomal molecules in microbial systematics. (5 marks)
7. Describe the steps involved in identifying bacteria using 16SrRNA analysis. (5 marks)
8. In microbial systematics, what are signatures sequences? (5 marks)
9. Describe the FISH technology and its uses. (5 marks)
10. List common properties between domains Archaea and Eukarya? (5 marks)
11. Describe the major phenotypic characteristics used in bacterial systematics. (5 marks)
12. Explain the concept of ribotyping. (5 marks)

Section B: Essays Section **[60 marks]**

1. Synthesize a thorough essay illustrating the differences between the domain Archaea and domain Bacteria. In your essay consider the diversity of the Bacteria and Archaea using the main groups in these domains. (30 marks)
2. Envision that you are a microbes researcher working the Namib Desert of Namibia and that you are sufficiently convinced that you have discovered a new bacteria from Namib desert soil samples. Describe the process of naming this new bacterial species including evidence generation that this bacterium is indeed a new species. (30 marks)