



*(University of Choice)*

**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

**MAIN CAMPUS**

**UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR**

**YEAR ONE SEMESTER ONE EXAMINATIONS**

**MAIN EXAM  
FOR THE DEGREE  
OF  
MASTER OF SCIENCE IN BIOINFORMATICS**

**COURSE CODE: SBI 813**

**COURSE TITLE: ALGORITHMS IN BIOINFORMATICS**

**DATE: MONDAY, 10<sup>TH</sup> JANUARY 2022 TIME: 8:00 – 11:00 A.M.**

**INSTRUCTIONS TO CANDIDATES**

Answer question ONE [COMPULSORY] and any other FOUR questions

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

1. Using a flow chart diagram, indicate the high throughput sequencing data used in drug discovery, design and development in Bioinformatics [20 marks]
2. Discuss the various steps involved in metagenomics analysis in exploring taxonomic and functional diversity of microorganisms [10 marks]
3. Discuss the various algorithms used in phylogenetic sequence analysis [10 marks]
4. Using a flow chart diagram, demonstrate a comprehensive sequence analysis pipeline [10 marks]
5. Write an essay on the theory and practice behind pyrosequencing [10 Marks]
6. Discuss the current research trends in Genomics, Proteomics and Bioinformatics in medicine and basic science research [10 Marks]
7. Discuss the bioinformatics methods/approaches used to predict protein structure and function [10 Marks]
8. Discuss the role of single nucleotide polymorphisms[SNPs] in human and non-human genome analysis [10 Marks]