



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH AND APPLIED SCIENCES

DEPARTMENT OF NATURAL AND APPLIED SCIENCES

QUALIFICATION : BACHELOR OF SCIENCE HONOURS	
QUALIFICATION CODE: 08BOSH	LEVEL: 8
COURSE CODE: BIO811S	COURSE NAME: BIONFORMATICS
SESSION: JUNE 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 120

FIRST OPPORTUNITY 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]**

1. Explain the concept of gene copy number and how it can complicate single gene circuits (10)
2. Use an example of a human disease complex to describe the concept of multigene interactions. (10)
3. Choose eukaryotic gene expression control example of your choice to describe modelling whole genome circuits (10)
4. Compare and contrast different types of pairwise alignments of protein sequences. (10)
5. Describe a dynamic feedback control of gene expression. (5)
6. Regarding database searches, write short notes on:
 - a. E-values (5)
 - b. Similarity (5)
 - c. Homology (5)

SECTION B: ESSAY QUESTIONS**[60]**

1. Describe the use of a Biosafety Clearing House using examples. (30)
2. Write a detailed essay on PSI-BLAST. (30)