MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

FOURTH YEAR SECOND SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN PUBLIC HEALTH WITH INFORMATION TECHNOLOGY

MAIN CAMPUS

PMB 413: INTRODUCTION TO COMPUTATIONAL BIOLOGY AND BIOINFORMATICS

Date: 31st July, 2017

Time: 3.30 - 6.30pm

INSTRUCTIONS:

* Answer ALL Questions in Section A and any other TWO in Section B.

SECTION A (40 MARKS)
ANSWER ALL THE QUESTIONS

1. (a) Define the term bioinformatics and computational biology (2 marks)

   (b) Describe the steps put in place to reduce redundancies in biological databases (8marks)

3. (a) Differentiate between the following terms:

   i. Motif and domain (2 marks)
   ii. Sequence similarity and sequence identity of a protein (2 Marks)

   (b) Discuss THREE most important requirements for implementing algorithms for sequence database searching (6 marks)

4. Explain the limitations of biological databases (10 marks)

SECTION B (30 MARKS)

ANSWER ONLY ANY TWO QUESTIONS

5. Using illustrations, differentiate between local and global alignments of sequences (15 Marks)

6. Giving specific examples, describe the following biological databases (15 Marks)
   i. Primary databases
   ii. Secondary databases
   iii. Specialized databases

7. Describe in details the applications of bioinformatics and computational biology in biomedical sciences. (15 Marks)