MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

THIRD YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE AND BACHELOR OF EDUCATION SCIENCE WITH INFORMATION TECHNOLOGY

MAIN CAMPUS

SZL 303: GENERAL GENETICS

Date: 2nd December, 2016 Time: 3.30 - 6.30 pm

INSTRUCTIONS:

- Answer ALL questions in SECTION A and any TWO in SECTION B.
- Illustrate your answers with relevant examples and/or well labeled diagrams where appropriate.

Section A. (40 Marks)

Answer all questions in this section. All questions carry equal marks (5 Marks).

1) State any **five** applications of genetic mapping.

2) Define a polygenic trait and give any **three** features that characterize it.

3) Outline Messelson and Stahl's experiment on the semi-conservative replication of DNA molecule.

4) Briefly explain any **two** types of extra-nuclear inheritance.

5) Briefly explain any **five** characteristics of the genetic code.

6) State any **five** objectives of the human genome project.

7) Distinguish among point mutation, silent mutation, missence mutation, nonsense mutation and juxtaposing mutation.

8) Using a relevant example, briefly explain epistasis.

SECTION B. 30 Marks

Answer any **two** questions. Each question carries 15 Marks.

9) Discuss the main processes that can result into changes in genetic composition of a population.

10) Analyze the short-term effects of polyploidization on cell size, body size, genomic stability, and gene expression among eukaryotes.

11) Evaluate the lac operon concept.

12) Discuss the host genetics of sub-Saharan African population and its implication to infectious diseases.