MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR
THIRD YEAR FIRST SEMESTER

SCHOOL OF TOURISM AND NATURAL RESOURCE MANAGEMENT
BACHELOR OF SCIENCE (ENVIRONMENTAL STUDIES)

COURSE CODE: EBH 305
COURSE TITLE: GENETICS AND EVOLUTION

DATE: 13TH DECEMBER, 2018 **TIME: 0830 – 1030 HRS**

INSTRUCTIONS TO CANDIDATES

ATTEMPT ALL QUESTIONS IN SECTION A AND ANY 3 IN SECTION B

Support your answers with relevant examples and illustrations and clearly show your calculations, where relevant.

This paper consists of 2 printed pages. Please turn over

SECTION A (25 MARKS)

Attempt ALL questions in this section.

1. Define the following terms;
   i. Allele
   ii. Locus
   iii. Heterozygote
   iv. Test cross
   v. Monohybrid crossing (***5 marks***)

2a. What is a model organism in genetic experimentation? (***2 marks***)

2b. State THREE contrasting characteristics of the garden pea that Mendel studied (***3 marks***).

3. The genotype distribution for a certain polymorphic locus was determined as follows; **AA** = 298, **Aa** = 489 and **aa** = 213. Calculate the frequencies of alleles **A** and **a** in the population. (***5 marks***).

4. Briefly describe the process of Transcription in the protein synthesis process (***5 marks***).

5. Briefly explain the significance of studying genetic diversity in wild populations (***5 marks***).

SECTION B (45 MARKS)

Attempt ANY THREE questions.

6. Discuss any **FIVE** major deviations from Mendelian monohybrid and dihybrid inheritance patterns (***15 marks***).
7. Discuss types of DNA mutations (***15 marks***).

8a. What are evolutionary forces? (***3 marks***)

8b. Discuss **FOUR** evolutionary forces that interact to influence distribution of alleles (genes) in a population (***12 Marks***).

9a. Discuss the major characteristics of the mitochondrial DNA (***8 marks***).

9b. Identify the aspects of animal ecology / biology that can be studied using the mt DNA as a molecular marker (***7 marks***).

********** END OF EXAM QUESTIONS**********