



# **MAASAI MARA UNIVERSITY**

**UNIVERSITY EXAMINATIONS 2018/2019  
ACADEMIC YEAR**

**FIRST YEAR**

**RESIT/RETAKE EXAMINATION**

**SCHOOL OF TOURISM AND NATURAL  
RESOURCE MANAGEMENT**

**BACHELOR OF SCIENCE  
(ENVIRONMENTAL BIOLOGY AND HEALTH)**

**COURSE CODE: EBH 1107**

**COURSE TITLE: GENERAL GENETICS**

DATE:

TIME:

**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 3 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 that make mitochondrial DNA an ideal molecular marker to study genetic diversity, population genetics, hybridization and evolutionary history of organisms ( **15 Marks**).

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