MAASAI MARA UNIVERSITY

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

SCHOOL OF TOURISM AND NATURAL RESOURCE MANAGEMENT

BACHELOR OF ENVIRONMENTAL STUDIES (ENVIRONMENTAL BIOLOGY AND HEALTH)

COURSE CODE: EBH 3121

COURSE TITLE: MOLECULAR GENETICS

DATE: 3RD DECEMBER, 2018 **TIME: 1100 - 1300 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: (**5 marks**).
   i. Okazaki fragments
   ii. Codon
   iii. Plasmid
   iv. Karyotype
   v. Recombinant DNA Technology

2. State the three types of RNA and their functions (**5 Marks**).

3. Briefly explain three applications of molecular genetics in biodiversity conservation (**5 marks**).

4. Explain the meaning and significance of RNA processing during translation **(5 marks)**.

5i. State **2** characteristics of the genetic code (**2 marks**).
ii. Explain any **3** characteristics of the DNA that make it an ideal molecule for carrying and transmitting genetic information (**3 marks**).

SECTION B (45 MARKS)

Attempt ANY THREE questions.

6. Discuss why the mitochondrial DNA is an ideal molecular marker for studying population genetics (**15 marks**).

7. Write an essay on the three main models that have been proposed to explain DNA replication and, giving reasons, identify which of the three models is the most plausible. (**15 marks**).

8. Discuss the various types of DNA mutations **(15 marks).**

9i. Explain the main phases of a PCR process **(10 marks)**
ii. Describe applications of PCR in disease diagnostics (**5 marks)**

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