



# **MAASAI MARA UNIVERSITY**

**REGULAR UNIVERSITY EXAMINATIONS  
2018/2019 ACADEMIC YEAR  
SECOND YEAR FIRST SEMESTER**

**SCHOOL OF TOURISM AND NATURAL  
RESOURCE MANAGEMENT**

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

**COURSE CODE: AHP 2105**

**COURSE TITLE: GENETICS AND CYTOGENETICS**

**DATE: 6<sup>TH</sup> DECEMBER 2018**

**TIME: 0830 - 1030HRS**

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**INSTRUCTIONS TO CANDIDATES**

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

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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. Explain the meaning of the term 'Recombinant DNA Technology' and explain its role in livestock production **(5 Marks)**

2. Write short notes on the semi conservative model of DNA replication **(5 Marks)**

3. Give the meaning of the following terms:

- i. A vector
- ii. Polyploid
- iii. Okazaki fragments
- iv. Homozygote
- v. Karyotype

**(5 marks)**

4. Give 5 differences between nuclear and mitochondrial DNA **(5 marks)**

5. State the differences between:

- i. Introns and Exons
- ii. Penetrance and Expressivity
- iii. Incomplete and co-dominance
- iv. Epistasis and Pleiotropy
- v. Backcross and Testcross

**(5 Marks).**

## **SECTION B (45 MARKS)**

**Attempt ANY THREE questions.**

6. Write an essay on chromosomal mutations **(15 marks).**

7. Discuss the process of DNA transcription and translation in eukaryotes **(15 marks).**

8. Discuss the cell cycle highlighting the major cytogenetic processes and their significance **(15 marks).**

9i. Explain the main phases of a PCR process **(10 marks)**

ii. Describe applications of PCR in livestock disease diagnostics **(5 marks)**

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