



MAASAI MARA UNIVERSITY
SPECIAL/ RESIT UNIVERSITY
EXAMINATIONS

2021/2022 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER

SCHOOL OF NATURAL RESOURCE TOURISM
AND HOSPITALITY

BACHELOR OF ENVIRONMENTAL STUDIES
(BIOLOGY AND HEALTH)

COURSE CODE: EBH 3121

COURSE TITLE: MOLECULAR GENETICS

DATE: 6 TH APRIL,2022

TIME: 1100-1300HRS

INSTRUCTIONS TO CANDIDATES

Answer ALL the Questions in Section and Any **THREE** in section B

SECTION A : ANSWER ALL THE QUESTIONS (25 MARKS)

1. i. Explain the meaning of the term recombinant DNA Technology
(2 Mark).
- ii. Briefly explain the applications of Recombinant DNA Technology in agriculture, medicine and biodiversity conservation (3 Marks).
2. Explain the differences between:
 - i. B-Form and Z-form DNA (2 Marks)
 - ii. Nuclear and Mitochondrial DNA (3 Marks)
3. State 5 molecular methods that can be used to determine genetic diversity in natural populations (5 Marks).
4. i. Explain the meaning and significance of RNA processing during translation (2 marks).
- ii. State the three types of RNA and their functions (3 Marks).
5. Briefly describe the process of DNA translation in eukaryotes (5 Marks).

SECTION B ANSWER ANY THREE QUESTIONS (45 MARKS)

6. Discuss the attributes that make the mitochondrial DNA an ideal molecular marker to study population genetics (15 marks).
7. Discuss the process of DNA replication and transcription during protein synthesis (15 marks).
8. i. With the aid of diagrams, describe the main phases of a PCR reaction (12 marks).
- ii. Explain the benefits of the PCR to molecular genetics (3 Marks).
9. Discuss the three main models that have been proposed to explain DNA replication (15 Marks).

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