JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

THIRD YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN HORTICULTURE

2017/2018 ACADEMIC YEAR

REGULAR

COURSE CODE: AAS 3326

COURSE TITLE: PRINCIPLES OF MOLECULAR GENETICS

EXAM VENUE: **STREAM: BSc. Horticulture**

DATE: **EXAM SESSION:**

TIME: 2 HOURS

Instructions:

1. **Answer ALL the questions in section A and any TWO in section B.**
2. **Candidates are advised not to write on question paper.**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A [30 MARKS]

Answer ALL questions from this Section.

1 a. What is translation (1 mark)

b. By 1966 the search for the genetic code was over. State three principles of the genetic code (3 marks)

c. State factors involved in transcriptional regulation (3 marks)

d. Using a diagram explain how genes are structured to ensure their expression. (3 marks)

2. a. State four potential benefits of molecular modification (4 marks)

b. Using a diagram explain DNA structure and how it is structured to perform its function

(4 marks)

c. What are potential benefits of genetic modification? (2 marks)

3. a. State key enzymes in molecular biology and their functions (4 marks)

b. What determines the cost of marker assisted selection (MAS) (3marks)

c. What are the good characteristics of a good marker for marker assisted selection?

(3marks)

SECTION B [40 MARKS]

Answer any TWO QUESTIONS from this Section.

Q4. Discuss molecular techniques applicable to plant and animal sciences towards sustainable food security (20 marks)

Q5. Discuss different types of molecular markers including their applications, merits and demerits (20 marks)

Q6. Transcription and translation are two main processes in gene expression. Discuss in details these two processes. (20 marks)