



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

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

2018/2019 ACADEMIC YEAR

REGULAR

COURSE CODE: AAS 3326

COURSE TITLE: PRINCIPLES OF MOLECULAR GENETICS

EXAM VENUE:

STREAM: BSc. Horticulture

DATE: 24/4/19

EXAM SESSION: 12.00 – 2.00pm

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. Define molecular marker (1 mark)
- b. By 1966 the search for the genetic code was over. State three principles of the genetic code (3 marks)
- c. Briefly illustrate and discuss the shapes of the chromosome as a result of varying position of the centromere (3 marks)
- d. Using a diagram explain how genes are structured to ensure their expression. (3 marks)
2. a. Explain forward and reverse genetics (4 marks)
- b. Define chromosomal mutations and discuss with illustrations the various forms of chromosomal mutations (3 marks)
- c. State the process of maturation of pre mRNA (2 marks)
3. a. Using a diagram explain DNA replication (4 marks)
- b. When does markers assisted selection really help? (3marks)
- c. State types of RNAs and their function (3 marks)

SECTION B [40 MARKS]

Answer any TWO QUESTIONS from this Section.

- Q3. Discuss molecular techniques applicable to plant and animal sciences towards sustainable food security (20 marks).
- Q4. Discuss different types of molecular markers including their applications, merits and demerits (20 marks)
- Q5. Transcription and translation are two main processes in gene expression. Discuss in details these two processes. (20 marks)