



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY**

**SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES**

**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF  
EDUCATION SCIENCE WITH IT**

**3<sup>RD</sup> YEAR 2<sup>ND</sup> SEMESTER 2018/2019 ACADEMIC YEAR**

**MAIN CAMPUS - REGULAR**

---

**COURSE CODE: SZL 303**

**COURSE TITLE: GENERAL GENETICS**

**EXAM VENUE: LAB 14                      STREAM: (BED)**

**DATE: 29/04/2019                      EXAM SESSION: 12.00-2.00PM**

**TIME: 2 HOURS**

---

**Instructions:**

- 1. Answer ALL questions in Section A and Any two questions 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: SHORT ANSWER QUESTIONS (30 MARKS)**

1. Describe a genetic map and explain how a map distance may be determined (3 Marks)
2. Outline three types of aneuploidy (3 marks)
3. Discuss three types of mutations that involve changes in chromosome structure (3 Marks)
4. i) Explain what epistasis is. (1 Mark)  
ii) Describe the two types of epistasis (2 marks)
5. Discuss the major functions of the DNA (3 Marks)
6. Outline the functions of the three distinct types of Ribonucleic acid molecules involved in protein synthesis (3 Marks)
7. Describe the sequence of events during the process of DNA replication. (3 Marks)
8. Discuss three categories of chemical mutagens (3 Marks)
9. Explain three uses of induced mutations in crop improvement (3 Marks)
10. There are several potential control points in gene expression pathway. Identify three possible places where gene regulation can occur in the production of an active gene product (3 Marks)

### **SECTION B: ESSAY QUESTIONS (40 MARKS)**

11. Giving examples, discuss the variety of genes interactions (20 Marks)
12. i) Discuss six characteristic features of mutations (12 Marks)  
ii) Explain the four main classes of identifiable mutants (8 marks)
13. Discuss the process of DNA replication, transcription and translation (20 Marks)
14. Discuss the factors that affect genetic diversity in natural populations (20 marks)