



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION
(SCIENCE)
1ST YEAR 1ST SEMESTER 2013/2014 ACADEMIC YEAR
MAIN

COURSE CODE: SZL 103

COURSE TITLE: INTRODUCTION TO GENETICS AND EVOLUTION

EXAM VENUE: LAB 3

STREAM: (Biological Sciences)

DATE: 14/04/14

EXAM SESSION: 9.00 – 11.00 AM

TIME: 2.00 HOURS

Instructions:

- 1. Answer ALL Questions in Section A and ANY other 2 questions in Section B**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A:

1.List down any three prehistoric theories that attempted to explain the continuity of life. 3marks

1. Explain the term Genetics 3marks
2. State any three properties of a gene. 3marks
3. Describe Mendel's Second Law of Inheritance 3marks
4. Outline any three factors that can affect genetic equilibrium. 3marks
5. Distinguish between Larmackism and Darwinism theories . 3marks
6. Describe the contribution of Augustin Weissmann to the understanding of heredity. 3marks
7. State three types of Post-Zygotic Isolating Mechanisms. 3marks
8. Explain the relevance of the concept of Modern Genetics. 3marks
9. State the three main causes of genetic variation in a population of organisms? 3marks

SECTION B (40 MARKS):

QUESTION 10

Discuss the following ancient concepts of heredity

- (i) Preformation
- (ii) Epigenesis
- (iii) Pangenesis
- (iv) Germplasm (20 marks)

QUESTION 11

- a) A single trinucleotide strand contains the base sequence G-T-C-A. Giving a reason state whether it is a RNA or DNA strand and determine the base sequence of the complementary strand (3 marks)
- b) A gene whose effect is recessive to that for normal feathers causes silky feather in a fowl.

i) If 96 birds were raised from a cross between individuals that were heterozygous for this gene. How many would be expected to be silky and how many normal? (5 marks)

ii) What would be the easiest way to determine whether a normal feathered bird is homozygous or heterozygous? (2 marks)

c) Briefly describe the Prezygotic Isolating Mechanisms. (10 marks)

QUESTION 12

Discuss the different types of gene interactions expressed in Mendelian inheritance of characteristics in organisms. (20 marks)

QUESTION 13

Discuss the process of natural selection as outlined by Charles Darwin. (20 marks)