GARISSA UNIVERSITY

UNIVERSITY EXAMINATION 2017/2018 ACADEMIC YEAR ONE FIRST SEMESTER EXAMINATION

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

FOR THE DEGREE OF BACHELOR OF EDUCATION SCIENCE

COURSE CODE: ZOO 211

COURSE TITLE: ANIMAL GENETICS

EXAMINATION DURATION: 3 HOURS

DATE: 05/12/17 **TIME: 09.00-12.00 PM**

INSTRUCTION TO CANDIDATES

- **The examination has SIX (6) questions**
- **Question ONE (1) is COMPULSORY**
- **Choose any other THREE (3) questions from the remaining FIVE (5) questions**
- **Use sketch diagrams to illustrate your answer whenever necessary**
- **Do not carry mobile phones or any other written materials in examination room**
- **Do not write on this paper**

This paper consists of TWO (2) printed pages ***please turn over***

QUESTION ONE (COMPULSORY)

(a) Define the following :

i. Phenotype **[1 mark]**
ii. Genotype **[1 mark]**
iii. Epistasis **[1 mark]**

(b) List three (3) methods of measuring variation in breeding populations **[3 marks]**

(c) Outline the principal aspects of evolution of sexual reproduction **[5 marks]**

(d) Describe any six principles of genetics **[6 marks]**

(e) Briefly describe the type and function of cell division in eukaryotic organisms **[6 marks]**

(f) Describe 'transcription' and show its role in a reproductive cell **[2 marks]**

QUESTION TWO

(a) Provide a brief description of gene regulation **[4 marks]**

(b) Outline the principal types of mutations **[8 marks]**

(c) Characterize the core methods of identifying inherited diseases **[3 marks]**

QUESTION THREE

Write short notes on the following:

i. Mendelian inheritance, **[9 marks]**

ii. Mendel's Laws and exceptions to these laws **[6 marks]**

QUESTION FOUR

(a) Discuss with particular examples the principle of coevolution **[9 marks]**

(b) Describe inbreeding depression and show how it affects the minimum viable population (MVP) and genetic variation in demes **[6 marks]**

QUESTION FIVE

(a) Define the terms

i. "extinction'
ii. 'gene linkage' **[4 marks]**

(b) Outline the process of 'autosomal dominant inheritance **[3 marks]**

(c) Provide a brief description of the 'Darwinian fitness' **[8 marks]**

QUESTION SIX

Describe in detail gene structure in both prokaryotes and eukaryotes **[15 marks]**