



GARISSA UNIVERSITY

UNIVERSITY EXAMINATION **2017/2018** ACADEMIC YEAR **TWO**
FIRST SEMESTER EXAMINATION

SCHOOL OF EDUCATION, ARTS AND SOCIAL SCIENCES

FOR THE DEGREE OF BACHELOR OF EDUCATION (ARTS)

COURSE CODE: BOT 213

COURSE TITLE: INTRODUCTORY GENETICS AND EVOLUTION

EXAMINATION DURATION: 3 HOURS

DATE: 11/12/17

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 terms [4 marks]
- i. Heredity
 - ii. Genetics
 - iii. Variations
 - iv. Alleles / allomorphs
- (b) State the difference between [6 marks]
- i. Dominant and Recessive genes
 - ii. Phenotype and Genotype
 - iii. Homozygous and Heterozygous alleles
- (c) Briefly state Mendel's Experimental, Quantitative advantages of using pea plants for genetic study. [6 marks]
- (d) Briefly explain how Genetic Diversity Affect the Size of Small Populations [4 marks]
- (e) Define the term 'coevolution 'and state how it is applied in the field of genetics [3 marks]
- (f) Briefly describe the significance of 'backcrossing' [4 marks]

QUESTION TWO

- (a) Define mitosis and meiotic cell division [2 marks]
- (b) Using a well labeled illustration compare and contrast mitotic and meiotic cell division. [13 marks]

QUESTION THREE

Most organisms show 'good fit' to their environment. Discuss this statement with respect to adaptation. [15 marks]

QUESTION FOUR

- (a) State the main characteristics of 'Genetic Drift' [3 marks]
- (b) State the principle characteristics of DNA and Explain why gene loci on the same chromosomes are generally considered to be in the same linkage group [12 marks]

QUESTION FIVE

Write short notes on monohybrid and dihybrid phenomena showing their functional significance. [15 marks]

QUESTION SIX

Discuss the intellectual background to Darwin's Discovery and how this has been used to explain adaptive radiation. [15 marks]

