



(Knowledge for Development)

KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2016/2017 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER
SUPPLEMENTARY/SPECIAL EXAMINATIONS

**FOR THE DEGREE OF BACHELOR EDUCATION (SCIENCE),
BACHELOR OF SCIENCE (BIOLOGY) AND (BIO-RESOURCE
MANAGEMENT)**

COURSE CODE: SZL 313
COURSE TITLE: ANIMAL GENETICS AND EVOLUTION

DATE: 14/9/2017 **TIME: 3:00 – 5:00 P.M**

INSTRUCTIONS TO CANDIDATES

Answer question **ONE** [1] and **ANY** other **TWO** [2] questions
TIME: 2 Hours

This paper consists of 2 printed pages. Please Turn Over



KIBU observes **ZERO** tolerance to examination cheating

HS

1. a) Explain why the prophase stage is referred to as a “**mobilization for action**” phase. (4mks).
 - b) If a cell is treated with a **metabolic poison** such as cyanide during interphase, mitosis fails to occur. Explain this phenomenon. (3mks).
 - c) [i] Name the factors that **curtailed** early scientists from grasping the concepts of heredity. (4mks).
 - [ii] Differentiate **genomics** and **bioinformatics**. (3mks).
 - d) [i] List four **nucleosides**. (4mks)
 - [ii] State **three** characteristics of **genetic material**. (3mks)
 - e) Explain **three roles of genetics** to human economics. [6mks]
 - f) Explain how **chromosomal constancy** is derived during mitosis. [3mks]
2. a) If a heterozygous allele of genes is **selfed**, predict the probability of the homozygous genotype. (3mks)
 - b) In a certain hospital, **25000** births were recorded. In **24** cases had an extra chromosome at the **21st** chromosome pair. In 15 cases, the babies had an extra Y chromosome. Determine the probability that the child born in that hospital will have an **extra Y** chromosome. (5mks)
 - c) Describe the three mechanisms of evolution. (12mks)
3. a) In humans **red colour** blindness is an X linked recessive trait. A woman with normal vision whose father was colour blind married a man with normal vision whose father was also colour blind. The couple had a **colour blind** daughter. Is **infidelity** suspected? Explain. (7mks)
 - b) Discuss how **mechanisms of isolation** that led to evolution in animals. Discuss. (7mks)
 - c) State three **statistical tools** utilized in genetics. (3mks).
 - d) Considering **5 independent loci**, what is the probability of **3 loci** having dominant phenotypes and the remaining possessing the recessive phenotypes if chances of dominant phenotype occurrence are **0.75**? (3mks).
4. [a] State Mendel’s law of **independent assortment** of genes. (2mks).
 - b) Define: [i] Cloning [2mks] [ii] Proteomics [2mks] [iii] Genome [1mk]
 - c) Discuss three **theories** of the formation of the earth. (7mks)
 - d) Explain the following **theories** of inheritance: i) Vapours and Fluid (3mks) ii) Preformation (3mks)
5. a) Describe the **structure** of DNA. (7mks).
 - b) Discuss how Natural Selection led to evolution. [10mks]
 - c) Cite three **underlying principles** of mitosis process. [3mk]