



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

P.O. Box 62157

00200 Nairobi - KENYA

Telephone: 891601-6

MAIN EXAMINATION

JANUARY – APRIL 2019 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF BIOLOGY

PART TIME PROGRAMME

BIO 103: EVOLUTIONARY BIOLOGY

Date: April 2019

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

- Q1. a) Explain five factors that bring about evolutionary change in a population
(10marks)
- b) i) Describe the Darwin's concept of natural selection **(3marks)**
ii) State the types of selection processes that occur in natural and artificial populations? **(6marks)**
- c) i) Intensity of selection pressure within a population may be produced by changes in external or internal factors. Explain
(4marks)
ii) What are the effects of increased selection pressure? **(2marks)**
- d) Using examples, describe the reproductive isolation mechanisms that lead to speciation **(5 marks)**
- Q2. a) Discuss Lamarckian evolutionary theory **(10 marks)**
b) Using the peppered moth, show how evolution can be observed in small scale **(10 marks)**

- Q3 a) Describe the principal, conditions and implications of Hardy-Weinberg equilibrium **(15marks)**
b) In a population of 10,000 people, one person is an albino. Calculate the frequency of the homozygous dominant and the carrier genotype in the population **(5marks)**
- Q4 a) Discuss the explanations given for the incompleteness of the fossil record as evidence for the theory of evolution **(10marks)**
b) Describe either special creation or spontaneous generation theory of origin of life. **(10marks)**
- Q5. Using relevant examples, discuss the principal of adaptive radiation. **(20 marks)**

END