



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF SCIENCE IN BIOLOGY, BACHELOR OF EDUCATION (SCIENCE),
BED (SPECIAL NEEDS)

SZL 304: EVOLUTIONARY BIOLOGY

DATE: 9/3/2023

TIME: 8.30 – 10.30 AM

INSTRUCTIONS

1. Answer 1 (compulsory) and **any two** questions
2. Use clean well labelled diagrams wherever appropriate.

QUESTION ONE (30 MARKS)

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|----|--|------------|
| a) | Describe the implications of the genetic codes degeneracy to evolution | (3 mark) |
| b) | Outline any tenets of natural selections according to Charles Darwin | (3 marks) |
| c) | Describe 3 barriers to speciations due to reproductive isolations | (3 marks) |
| d) | Give the significance of traits in a population | (3 marks) |
| e) | Distinguish between gradualism and punctuated model of Evolutionary | (3 marks) |
| f) | Outline the challenges of Darwins views on evolution | (3 marks) |
| g) | Describe two methods used measures to quantify genetic variation | (3marks) |
| h) | With eexamples decrcribe any three human induced selections | (3 marks) |
| i) | Describe the concept of sexual selection in evolutionary biology | (3 marks) |
| j) | Illustrate how recombinations causes variations in offspring | (3marks) |

QUESTION TWO (20 MARKS)

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|----|---|------------|
| a) | Distinguish inter and intra sexual selections | (6 marks) |
| b) | Discuss the types of natural selection | (14 marks) |

QUESTION THREE (20 MARKS)

Predict and discuss the outcome of crosses involving two independently assorting genes in a dihybrid crosses (20 marks)

QUESTION FOUR (20 MARKS)

Derive the Hardy – Weinburg equations (20 marks)

QUESTION (20 MARKS)

Environment is a key determinant in the origin of species and spaciation. Discuss (20 marks)