



# MACHAKOS UNIVERSITY

University Examinations 2019/2020 academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SZL 203: DEVELOPMENTAL BIOLOGY

DATE: 21/1/2021

TIME: 2.00-4.00 PM

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## INSTRUCTIONS

1. Answer Question one (compulsory) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

## SECTION A

### QUESTION ONE (30 MARKS) COMPULSORY

- |    |   |           |
|----|---|-----------|
| a) | Describe three (3) disorders that result from improper neurulation  | (3 marks) |
| b) | Explain “ontogenetic development”                                   | (3 marks) |
| c) | Outline the role of the hormone Oestrogen in mammalian reproduction | (3 marks) |
| d) | Briefly discuss polarity of an ovum                                 | (3 marks) |
| e) | Illustrate the structure of an insect egg before ovulation          | (3 marks) |
| f) | Outline any three procedures of drawing fate maps                   | (3 marks) |
| g) | Explain epimorphosis and methods in which it may occur              | (3 marks) |
| h) | Outline the regulation of metamorphosis in insects                  | (3 marks) |
| i) | Briefly explain parthenogenesis as a mode of reproduction           | (3 marks) |
| j) | Explain ovoviviparity in sexual reproduction                        | (3 marks) |

## SECTION B

### QUESTION TWO (20 MARKS)

- |    |   |            |
|----|---|------------|
| a) | Describe the process of gastrulation in mammals.              | (10 marks) |
| b) | outline the various types of cleavage in mammalian embryology | (10 marks) |

**QUESTION THREE (20 MARKS)**

Discuss metamorphosis in amphibians

**QUESTION FOUR (20 MARKS)**

Discuss embryonic induction in vertebrates

**QUESTION FIVE (20 MARKS)**

- a) Discuss the function of extra-embryonic membranes during human embryology (10 marks)
- b) Describe the stepwise development to viviparity (10 marks)