



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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UNIVERSITY EXAMINATIONS 2021/2022

SECOND YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOCHEMISTRY

SZA 3205: DEVELOPMENTAL BIOLOGY

DATE: JANUARY 2022

TIME: 2 HOURS

INSTRUCTIONS: Answer Question ONE and any other TWO questions.

QUESTION ONE (30 MARKS)

- a) Explain how egg polarity and axes is designated (3marks)
- b) Give two differences between oogenesis and spermatogenesis (2marks)
- c) List four types of cleavage giving an example of an organism where each occurs (4marks)
- d) Outline properties of embryonic field (4marks)
- e) State the functional roles of the following processes associated with fertilization
 - i. Cortical reaction (2marks)
 - ii. Acrosomal reaction (2marks)
- f) Sketch a simple fate map of amphibian at early gastrula (5marks)
- g) Outline three steps that ensure species specificity in fertilization (3marks)
- h) Name extraembryonic membranes of the chick and state one major function of each (3marks)
- i) Explain briefly the developmental significance of meiosis in gametogenesis (2marks)

QUESTION TWO (20 MARKS)

Discuss the sequence of events and mechanism of gastrulation in sea urchin (20marks)

QUESTION THREE (20 MARKS)

- a) Describe the process of spermiogenesis starting with spermatid (10marks)
- b) Discuss the process of gastrulation in bird embryo (10marks)

QUESTION FOUR (20 MARKS)

Discuss two ways in which amnion and chorion are formed in mammals and state their functions (20marks)