



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya

Tel: +254(0) 799 529 958, +254(0) 799 529 959, + 254 (0) 712 524 293,

Website: info@must.ac.ke Email: info@must.ac.ke

University Examinations 2024/2025

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

SZL 3205: DEVELOPMENTAL BIOLOGY

DATE: JANUARY 2025

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

- a) Explain briefly the structural specialization of egg for fertilization (4 marks)
- b) Outline properties of embryonic field (4 marks)
- c) State the functional roles of the following processes associated with fertilization
 - (i) Acrosomal reaction (2 marks)
 - (ii) Cortical reaction (2 marks)
- d) Sketch a simple fate map of amphibian at early gastrula (5 marks)
- e) Outline three (3) steps that ensure species specificity during fertilization (3 marks)
- f) Explain developmental significance of meiosis in gametogenesis (3 marks)
- g) Explain briefly forces involved in the formation of blastocoels during blastula formation (4 marks)
- h) List three (3) types of cleavage and the organism involved (3 marks)

QUESTION TWO (20 MARKS)

Discuss cell surface interactions between egg and sperm during fertilization

QUESTION THREE (20 MARKS)

Discuss the sequence of events and mechanism of gastrulation in sea urchin

QUESTION FOUR (20 MARKS)

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