



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

**UNIVERSITY SPECIAL EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE
IN BIOLOGICAL SCIENCES**

MAIN CAMPUS - REGULAR

COURSE CODE: SZL 301
COURSE TITLE: DEVELOPMENTAL BIOLOGY
TIME: 2 HOURS

Instructions:

- 1. Answer ALL questions in Section A and ANY TWO questions in Section B**

Section A: Short Answer Questions (30 marks)

1. Define the following: (3 marks)
 - a. Embryogenesis
 - b. Morphogenesis
 - c. Development Biology
2. Give the three different germ layers formed during early embryonic development. (3 marks)
3. Differentiate between spermatocytogenesis and spermiogenesis. (3 marks)
4. Briefly describe the process of vitellogenesis. (3 marks)
5. Outline the four major events that constitute fertilization. (3 marks).
6. Give the three important axes formed by the embryo during development. (3 marks).
7. Name three important cell changes that work together during gastrulation. (3 marks).
8. Define embryonic induction, and differentiate between permissive and instructive induction. (3 marks)
9. Give a brief account of the process of implantation in mammals. (3 marks).
10. Outline three causes of congenital malformations in animals. (3 marks)

Section B: Essay Questions (40 Marks)

11. Describe in detail the process of oogenesis. (20 marks).
12. Describe the egg responses to activation. (20 marks)
13. Describe the process of formation of neural tube. (20 marks)
14.
 - a. Describe the different types of cell movements seen in gastrulation. (10 marks)
 - b. Describe, giving examples, the different ways by which cleavage can take place in animals, and outline the fate of the different groups of cells in the mammalian blastocyst. (10 marks)