



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES**  
**UNIVERSITY EXAMINATION FOR DEGREE OF BACHELOR OF EDUCATION SCIENCE**  
**WITH IT AND BACHELOR OF SCIENCE IN BIOLOGICAL SCIENCES**  
**THIRD YEAR FIRST SEMESTER 2018/2019 ACADEMIC YEAR**  
**MAIN CAMPUS - REGULAR**

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**COURSE CODE:** SZL 301/SBI 3311  
**COURSE TITLE:** DEVELOPMENT BIOLOGY  
**EXAM VENUE:** STREAM: (BED/BSc Bio)  
**DATE:** EXAM SESSION:  
**TIME: 2 HOURS**

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**Instructions**

- 1. Answer ALL questions in Section A (compulsory) and ANY TWO questions in Section B**
  - 2. Candidates are advised not to write on the question paper**
  - 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**
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**SECTION A:SHORT ANSWER QUESTION (30 MARKS)**

1. Distinguish between the terms Embryology and Developmental Biology. (3 marks)
2. Give three cell properties that are important in development. (3 marks)
3. Explain, with examples, how protective chemicals protect embryos from predators and harsh environmental conditions. (3 marks)
4. Briefly describe the 'early' responses of eggs to sperm. (3marks)
5. Examine the events surrounding vitellogenesis. (3 marks)
6. Give two functions of progesterone and one function of estrogen. (3 marks)
7. Briefly examine the following types of cell movements:
  - a. Involution (1 mark)
  - b. Delamination (1 mark)
  - c. Epiboly (1 mark)
8. Differentiate between permissive and instructive induction. (3 marks).
9. Briefly describe the membranes that form the placenta. (3 marks)
10. Explain the effects of any three teratogens in humans. (3 marks)

**SECTION B: ESSAY QUESTION (40 MARKS)**

11. Explore the process of spermatogenesis in mammals. (20 marks)
12. Classify mammalian placenta based on distribution of microscopic sites of attachment. (20 marks)
13. Distinguish between sex determination and sex differentiation, and describe how sex is determined in mammals and crocodile. (20 marks)
14. Analyze the following processes in mammals:
  - a. Cleavage (10 marks)
  - b. Neurulation (10 marks)