



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION
SCIENCE WITH IT**

3rd YEAR 1st SEMESTER 2016/2017 ACADEMIC YEAR

MAIN CAMPUS - REGULAR

COURSE CODE: SZL 301

COURSE TITLE: DEVELOPMENT BIOLOGY

EXAM VENUE: PHY LAB

STREAM: (BED)

DATE: 26/04/16

EXAM SESSION: 2.00 – 4.00 PM

TIME: 2 HOURS

Instructions:

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

1. Define the following terms:
 - a. Development Biology. (1 mark)
 - b. Teratogenicity. (1 mark)
 - c. Morphogenesis. (1 mark)
2. Briefly Explain “vitellogenesis”. (3 marks)
3. Outline four major events that constitute fertilization. (3 marks)
4. Briefly describe the ‘early’ responses of eggs to sperm. (3 marks)
5. Differentiate between holoblastic and meroblastic cleavage. (3 marks)
6. Explain the following cell movements in gastrulation:
 - a. Epiboly. (1 mark)
 - b. Invagination. (1 mark)
 - c. Ingression. (1 mark)
7. Briefly describe the formation of neural tube in chordates. (3 marks)
8. Define induction, and differentiate between permissive and instructive induction. (3 marks)
9. Give three functions of extra-embryonic membranes. (3 marks)
10. Give three examples of teratogens and explain their effects in humans. (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)

11. Classify mammalian placenta based on distribution of microscopic sites of attachment. (20 marks)
12. Describe sex determination in mammals, *Drosophila* and crocodiles. (20 marks)
13. Describe the process of gastrulation in the sea urchin. (20 marks)
14. Fully describe the process of spermatogenesis in mammals. (20 marks)