



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES
DEPARTMENT OF BIOLOGICAL SCIENCES

UNIVERSITY EXAMINATION FOR DEGREE OF BACHELOR OF SCIENCE IN
BIOLOGICAL SCIENCES

3RD YEAR FIRST SEMESTER 2016/2017 ACADEMIC YEAR

REGULAR

COURSE CODE: SBI 3311

COURSE TITLE: DEVELOPMENTAL BIOLOGY

EXAM VENUE: STREAM: (BSc Bio)

DATE: EXAM SESSION:

TIME: 2 HOURS

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 QUESTIONS (30 MARKS)

1. Define the following terms:
 - a) Developmental Biology (1 mark)
 - b) Mutation (1 mark)
 - c) Morphogenesis (1 mark)
2. Give three ways by which growth is brought about in the embryo. (3 marks)
3. Explain, with examples, how protective chemicals protect embryos from predators and harsh environmental conditions. (3 marks)
4. Briefly describe the 'late' responses of eggs to sperm. (3 marks)
5. Name the three important axes which embryos must develop during the process of development. (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. Define "induction", and differentiate between permissive and instructive induction. (3 marks)
9. Briefly describe the membranes that form the placenta. (3 marks)
10. Name three teratogens and explain their effects in humans. (3 marks)

SECTION B: ESSAY QUESTIONS (40 MARKS)

11. Explore the process of oogenesis 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 in crocodiles. (20 marks)
14. Analyze the process of gastrulation in sea urchin. (20 marks)