



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCE
Biological Sciences
2025_2 EXAMINATIONS

BIO413: Developmental Biology

Time: 2 Hours

Credit Unit: 2

Instruction: Attempt THREE (3) questions only. QUESTION 1 is compulsory.

Q1.

- a. Succinctly explain how germ cell migrates in birds (6 Marks)
- b. Describe the leptotene and zygotene stages of meiosis (6 Marks)
- c. Highlight the chronological sequence of events that occur in fertilization in Human (6 Marks)
- d. Enumerate four (4) different types of placenta based on histology (6 Marks)
- e. Explain the process of cleavage in snail (6 Marks)

Q2.

- a. Explain the Bonner's (1965) critique on cataloguing animals based on their adult structure (5 marks)
- b. Describe Aristotle findings in the development of birds (5 marks)
- c. Explain internal feralization in a named mammal (10 marks)

Q3.

- a. Explain how germ cell migration in birds and reptiles differs from that of the amphibians and mammals. (10 marks)
- d. Discuss the functions of a placenta (10 marks)

Q4a. State the features of mammalian cleavage that distinguish it from other cleavages. (5 marks)

- b. Explain the following Assisted Reproductive Technology (ART)
 - (i) In vitro fertilization (IVF) (5 marks)
 - (ii) Zygote intrafallopian transfer (ZIFT) or Tubal Embryo Transfer (3 marks)
 - (iii) Gamete intrafallopian transfer (GIFT) (3 marks)
 - (iv) Intracytoplasmic sperm injection (ICSI) (4marks)

- Q5.**
 - a. Define fertilization (2 marks)
 - b. Describe the functions of the parts of spermatozoa (4 marks)
 - c. Describe the formation of the early nervous system in mammals (10 marks)
 - d. List four (4) stages in Prophase I of meiotic cell division (4 marks)