



# **NATIONAL OPEN UNIVERSITY OF NIGERIA**

**National Open University of Nigeria**

**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**

**Faculty of Science**

**Department of Pure and Applied Sciences**

**2021\_1 EXAMINATION**

**COURSE CODE: BIO413**

**COURSE TITLE: DEVELOPMENTAL BIOLOGY**

**CREDIT UNIT: 2**

**TIME ALLOWED: 2 HOURS**

**INSTRUCTION: ANSWER QUESTION 1 AND ANY OTHER THREE QUESTIONS**

1. a. Succinctly describe how germ cell migrates in birds **6 Marks**  
b. Describe the leptotene and zygotene stages of meiosis **7 Marks**  
c. Highlight the specific sequence of events that occur in fertilization in Human **8 Marks**  
d. Enumerate four (4) different types of placenta based on histology **4 Marks**
2. a. Define embryogenesis **1 Mark**  
b. Explain the process of cleavage in snail **7 Marks**  
c. Draw and label the structure of a mammalian sperm cell **7 Marks**
3. a. Write the full meanings of the following Assisted Reproductive Technology:  
i) ZIFT **2 Marks**  
ii) GIFT **5 Marks**  
b. State the functions of meiotic cell division **8 Marks**  
c. Describe the stages of mitotic cell division
4. a. Using an annotated diagram only, describe the development of egg **7 Marks**  
b. Give a succinct explanation of the types of eggs based on the amount of yolk **8 Marks**
5. a. With diagrams, explain the process of crossing-over **5 Marks**  
b. Enumerate the principles of development **10 Marks**