



**National Open University of Nigeria**  
**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**  
**Faculty of Science**  
**Department of Pure and Applied Sciences**  
**SEPTEMBER, 2020\_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. Define the following terms: i. Embryology ii. Gametogenesis iii. Blastocoel **3 Marks**  
b. Highlight the contributions of Aristotle towards the development in birds. **5 Marks**  
c. State the principles of development **9Marks**  
d. Use an annotated diagram only, describe the development of the sperm **5 Marks**  
e. List the characteristics of the prophase stage **3 Marks**
  
- 2a. Write a comprehensive note on sperm-egg fusion **8 Marks**  
b. Concisely, explain internal fertilization in a named mammal **7 Marks**
  
- 3a. Expatriate on the types of egg membranes **7 Marks**  
b. Using an annotated diagram ONLY, describe the generalized circle of life of a toad **6 Marks**  
c. List four stages in Prophase I of meiotic cell division **2 Marks**
  
- 4a. Explain the journey of a zygote from fertilization to cleavage **9 Marks**  
b. Mention four (4) conditions associated with placental abruption in a woman **4 Marks**  
c. Write the full meaning of each of the following acronyms:  
i. GIFT ii. ZIFT **2 Marks**
  
- 5a. Highlight five (5) ways each, how infertility can be prevented in men and women **5 Marks**  
b. Explain gastrulation in snail **5 Marks**  
c. State the functions of a cell division that lead to the formation of sperm cells **5 Marks**