



# 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\_2 EXAMINATION

**COURSE CODE: BIO413**

**COURSE TITLE: DEVELOPMENTAL BIOLOGY**

**CREDIT UNIT: 2**

**TIME ALLOWED: 2 HOURS**

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

- 1a. Enumerate the roles of glycoprotein matrix secreted by the growing oocyte during fertilization (2mrks)
  - b. Identify the ways by which the route of mammalian PGC migration from the allantois resembles that of anuran PGC migration (5mrks)
  - c. Outline the conditions associated with placenta previa (5mrks)
  - d. Give an account of the contributions of J. L. Prevost and J. B. Dumas in Developmental Biology (5mrks)
  - e. Describe the formation of the two (2) distinguishable cells during the formation of sperm in the seminiferous tubules (8mrks)
- 2a. What are the roles of egg-binding proteins envisaged on the sperm membrane that impart species specificity (5 mrks)
  - b. Describe in detail the phenomenon of compaction in the mammalian cleavage (10mrks)
- 3a. Mention the changes that occur on the Zona pellucida as a result of Egg cortical reaction soon after fusion (7mrks)
  - b. Discuss fertilization in terms of functions and Outline the four (4) general common events that occur during fertilization (8 mrks)
- 4a. Explain what would happen in the following events in *Drosophila*: (i) if the pole cell nuclei are prevented from reaching the pole plasm.  
(ii) Pole cells lacking Nanos, (4mrks)
  - b. Describe the formation of the germ layers (11mrks)
- 5a. Expatriate on “how aging decreases a woman's chances of having a baby”. (6mrks)
  - b. Explain in detail why mammalian cleavage is the most difficult to study. (9mrks)