



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**FACULTY OF AGRICULTURAL SCIENCES**  
**DEPARTMENT OF ANIMAL SCIENCE AND FISHERIES**  
**2025\_2 EXAMINATIONS**

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**COURSE CODE: ANP 312**

**COURSE TITLE: Introduction to Genetics and Breeding**

**INSTRUCTIONS:** Answer question 1 and any other 2 questions.

**TIME:** 1 ½ hours

1. (a) Give a brief historical account of the study of the cell and cell structure. (17 ½ Marks)
  - (b) Enumerate the different chemical components of the cell. (5 Marks)
  - (c) What are the benefits that can be derived from an artificial insemination programme?  
(5 Marks)
  - (d) What is the relationship between deoxyribonucleic acid (DNA), gene, and chromosome?  
(2 ½ Marks)
2. Write short notes on the following:
- (a) Pleiotropism (3 Marks)
  - (b) Lethal genes (4 Marks)
  - (c) Additive genes (4 Marks)
  - (d) Epistasis (4 Marks)
3. (a) List the different stages of Mitosis (6 Marks)
- (b) Write short notes on the development of Synthetic varieties of crops (9 Marks)
4. (a) What are Alleles? (3 Marks )
- (b) Differentiate between Test cross and Back cross (6 Marks)
- (c) What are the major differences between the chemical structure of ribonucleic acid (RNA) and deoxyribonucleic acid (DNA)? (6 Marks)