



# **NATIONAL OPEN UNIVERSITY OF NIGERIA**

**University Village, Nnamdi Azikwe Express Way, Plot 91,  
Cadastral Zone,  
Jabi, Abuja**

**Faculty of Agricultural Sciences**

**FIRST SEMESTER EXAMINATION: June/July**

**COURSE CODE: ANP 310**

**COURSE TITLE: GENETICS AND BREEDING**

**DURATION: 2 HOURS**

**ANSWER ANY FOUR QUESTIONS**

1. (a) What are the properties of the cell membrane? (6 marks)  
(b) Briefly outline the functions of vacuoles in the cell (12 marks)  
(c ) State the major difference between Chromatin and Chromosomes (2 marks)  
(d) Give three examples of inorganic salts found in the cell (5 marks)
2. (a) List five major chemical constituents of the cell (5 marks)  
(b) Highlight three main functions of lipids in the cell (6 marks)  
(c) Describe in detail cell division (10 marks)  
(d) At what stage can meiosis in plant be studied? (4 marks)
3. (a) State the cell theory (5 marks)  
(b) Name the major types of nucleic acid found in the cell (4 marks)  
(c) What is mitosis and why is mitotic division necessary in the life of an organism? (16 marks) (4 marks)

4. (a) Using appropriate illustration, describe the phenomenon of Complementary genes expression in inheritance of characteristics (25 marks)

5. (a) Write short note on any three of the following cell components (25 marks)

- i. Lysosomes
- ii. Cytoplasm
- iii. Reticulum
- iv. Microtubule
- v. Nucleus