



# NATIONAL OPEN UNIVERSITY OF NIGERIA

National Open University Of Nigeria  
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja  
Faculty of Science

JULY 2017 EXAMINATION

**COURSE CODE: BIO 309**  
**COURSE TITLE: PLANT BREEDING (2 UNITS)**  
**TIME ALLOWED: 2 HOURS**

**INSTRUCTION: ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER THREE QUESTIONS.**

1.
  - a. What is Heterosis? **(2 marks)**.
  - b. Explain the genetic basis of heterosis **(5marks)**
  - c. By definition, differentiate between heterosis and Inbreeding **(1mark)**.
  - d. State any **four (4)** adverse effects of inbreeding **(2marks)**.
  - e. Write short notes on :
    - i. Inbreeding depression **(3marks)**
    - ii. Coefficient of Inbreeding **(2marks)**
  - f Outline the procedure involved in plant breeding for developing a disease resistance plant **(4marks)**.
  - g. State **seven** factors that have been describe to stimulate the rise of new epidemics **(6marks)**
2.
  - a. Define Plant Breeding **(2marks)**.
  - b. Outline **five** importance of plant breeding **(5marks)**.
  - c. By definition, differentiate between a Cultigen and a Landrace **(4marks)**.
  - d. Explain what you understand by Convectional Plant Breeding **(4marks)**.
3.
  - a. Itemise the **six (6) steps** or major activities of plant breeding **(3marks)**.

b. Based on cytological principles of plant breeding, describe a chromosome under the following:

i. Chromosome number **(3 marks)**

ii. Chromosome size **(3 marks)**

iii. Chromosome morphology **(3 marks)**

c. In a tabular form, state **three** differences between a heterochromatin and euchromatin **(3marks)**

4. Write on the following:

a. Self Incompatibility in plants **(5marks)**;

b. Gametophytic Self Incompatibility **(5marks)**;

c. Sporophytic Self Incompatibility **(5marks)**;

5. a. Differentiate between cytoplasmic male sterility and cytoplasmic-genetic male sterility **(10marks)**.

b. Outline the role of cytoplasmic-male sterility in hybrid maize breeding **(5marks)**.