NATIONAL OPEN UNIVERSITY OF NIGERIA

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

OCTOBER/NOVEMBER 2016 EXAMINATION

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

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

1. a. What is Heterosis? **(2 marks).**
   b. Explain the genetic basis of heterosis **(10marks)**
   c. By definition, differentiate between heterosis and Inbreeding **(1mark).**
   d. State any **four (4)** adverse effects of inbreeding **(4marks).**
   e. Write short notes on :
   i. Inbreeding depression (**4marks)**
   ii. Coefficient of Inbreeding (**4marks)**

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).**

6. a. Outline the procedure involved in plant breeding for developing a disease resistance plant **(8marks).**

    b. State **seven** factors that have been describe to stimulate the rise of new epidemics **(7marks)**