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**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**National Open University Of Nigeria**

**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**

**Faculty of Science**

**APRIL 2019 EXAMINATION**

**COURSE CODE: BIO 309**

**COURSE TITLE: PLANT BREEDING (2 UNITS)**

**TIME ALLOWED: 2 HOURS**

**INTRUCTION: ANSWER QUESTION ONE 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)**

1. 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).**

1. 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)**

1. Write on the following:
2. Self Incompatibility in plants **(5marks)**
3. Gametophytic Self Incompatibility **(5marks)**
4. 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).**