

FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI
SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY
DEPARTMENT OF CROP SCIENCE AND TECHNOLOGY

Session: 20014/2015

Semester: Rain

CST 506: Plant Breeding and Genetics

Credit units: 2

Instructions: Answer at least one from each section and five (5) questions in all.

Time allowed: 3 hrs

Section A

- 1 a) Briefly describe the various modes of reproduction prevalent in crop plants and
b) discuss their significance in plant breeding
- 2 a) Define self, cross- and often cross-pollinated crops
b) Briefly describe the various mechanisms that promote self- and cross pollination.

Section B

- 3 (a). As a plant scientist, discuss the principles of maintenance of genetic purity of breeding stocks, and indicate how they could enhance food sufficiency in Nigeria.
(b) Under seed certification scheme, describe the different classes of seeds.
- 4 (a). The ultimate aim of any seed programme is to ensure that seeds produced for a particular growing season are fully and adequately utilized by farmers. In line with the above, discuss the strategies for effective seed marketing and distribution.
(b). Discuss the importance of gene bank in plant improvement programme, and distinguish between field Gene bank and Cryobank.
(c) In a tabular form, compare and contrast meiosis and mitosis.

Section C

- 5 (a) Succintly discuss the causes of genetic deterioration in Crop varieties.
(b) Local germplasm has been described as a great resource in germplasm conservation. Discuss its features that justify the above claim.
- 6 (a) In order to sustain diversity in Crop germplasm, its conservation is paramount. Briefly describe the various types of conservation methods utilized for crops.
(b) As a Plant Breeder, an indigenous farmer who had been threatened by the increasing rate at which his contemporaries are losing the purity of their local varieties has just consulted with you. Discuss the measures he must take to maintain the genetic purity of his crop varieties.

Section D

- 7 (a). As a plant breeder, describe the steps you will take to develop a tomato variety that will be resistant to tomato wilt: Without hybridization and,
(b). With hybridization through conventional breeding method.
- 8 (a). Outline reasons why improvement of self pollinated crop plants is often difficult through conventional breeding method.
(b). Describe other methods of improving self pollinated crop plants.