



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCE
Department of Pure and Applied Sciences

2023_2 EXAMINATIONS

BIO309: PLANT BREEDING

TIME: 1½ HOURS

CREDIT UNIT: 1

INSTRUCTIONS: Answer question ONE (1) and any other THREE (3) questions

- 1a. Explain the nature of Polytene chromosomes (12 marks)
1b. Write on self-fertilization as a form of inbreeding (10mks)
1c. Given that the following organisms have the given number of somatic chromosomes, state the number of gametic chromosomes present in the organisms (3 marks):
- | | |
|-------------------|----|
| Tomato | 24 |
| Rice | 24 |
| Wheat | 42 |
| Onion | 16 |
| Maize | 20 |
| <i>Drosophila</i> | 8 |
- 2 Using cytological principle of plant breeding, explain the chromosome morphology under the following;
- (i) Centromere (7 marks)
 - (ii) Chromomere (8marks)
- 3a. Discuss the effect of heterosis in domestic animals (10 marks)
3b Outline the Selection process of cross-pollinated crops (5marks)
- 4a. Discuss the use of Clone in plant breeding (9 marks)
4b. Account for the existence of secondary constriction in chromosomes (6 marks)
- 5a. Expatriate on the role of cytoplasmic male sterility in hybrid production (9 marks)
5b. Explain the RNase mechanism of Gametophytic self-incompatibility (6marks)