



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCE
Department of Biological Sciences
2025_1 EXAMINATION

BIO402: Cytogenetics of Plants

Time: 2 Hours

Credit Units: 2

Instruction: Answer THREE questions only. QUESTION 1 is compulsory.

1. (a)i. Outline the behaviour of chromosomes during meiosis (4 marks)
ii. State the four (4) principles of chromosome theory of inheritance according to Edmund Beecher Wilson (4 marks)
(b) Write a comprehensive note on satellite chromosomes (10 marks)
(c) Polyploidy is of great advantage in Cytogenetics. Discuss (12marks)
Total Marks = (30 marks)
2. (a) Describe the production of Autotetraploids (8 marks)
(b) Discuss the consequences of Deletion during mutation(12 marks)
Total Marks = (20 marks)
3. (a) Enumerate the causes of Aneuploidy (6 marks)
(b) An organism has diploid chromosome number 14. Compute the expected number of chromosomes in the:
 - i. monosomic
 - ii. trisomic
 - iii. nullisomic
 - iv. tetrasomic
 - v. triploid
 - vi. autotetraploid

(Show how you arrive at each answer) (14 marks)
Total Marks = (20 marks)
4. (a)i. Enumerate the Functions of the Centromere (3 marks)
ii. Write succinctly on chromosome morphology (5marks)
(b)i What do you understand by chromosome compensation? (2 marks)
ii. Write a comprehensive note on Raphanobrassica (10 marks)
Total Marks = (20 marks)
5. (a)i. Explain briefly how DNA is organized to form chromatin (3marks)
ii. Banana cannot be propagated by seeds. Discuss (4 marks)
(b) Write short notes on the contributions of the following Scientists in the development of Cytogenetics:
 - i. Wilhelm August Hertwig (4 marks)
 - ii. Walter Flemming (4 marks)
 - iii. Joseph Gottlieb Kolreuter (5 marks)**Total Marks = (20 marks)**